THE IRON TRADE REVIEW

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UNSETTLED

CONDITIONS FOLLOW REDUCTIONS ON BARS

And Buyers Await Other Announcements—Pig Iron Prices Firmer, But Buying Not So Active.

The news that the price of steel bars had been reduced $4 per ton, coming so quickly after positive assurance that prices of finished materials would not be changed, was a great surprise to the trade. Hardly less surprise was expressed that, one reduction having been decided upon, others were not made at the same time. It is too early to predict what the ultimate effect of the reduction in the price of steel bars will be, but the cut of $3 on bar iron in the central western territory followed naturally, and it seems certain that other prices must be readjusted. For example, the price of crude steel can not remain the same as that for steel bars, and other inequalities hardly less glaring exist. The trade generally expects to see reductions in prices of billets, structural material and plates. So far, little, if any, business has developed in steel bars and bar iron since the reductions were announced, and the market is in a very unsettled condition. It is generally recognized that buying can not be expected to begin in earnest until consumers become convinced that no further reductions are to be made. About the only response of buyers, when notified of the price reductions, was to inquire as to what would be done with the old contracts and what reduction would be made on other finished materials. The reduction on steel bars also applies to shapes under three inches.

Some Good Results

Whatever may be the result of the price reductions, the fact remains that much good has been accomplished by preventing an earlier collapse in prices. The jobbers and manufacturers who had large stocks on hand, have, in some cases, been saved from bankruptcy, and all have been benefited by being permitted to dispose of their stocks without great sacrifice. There are conflicting rumors as to the exact cause for the reduction on steel bars, but it is evident that the agricultural implement manufacturers, who have so often in past years succeeded in obtaining concessions, were an important factor in bringing about the recent announcement.

Pig Iron Firmer

Before the break in steel bars was announced, pig iron prices had sagged close to the cost line. During the past week, the tendency has been upward. Many sellers have advanced from 50 cents to $1 per ton, and prices have not yet shown a tendency to be weakened by developments in finished lines. Buying this week has not been in such large volume as it was last week, but transactions have been numerous and inquiries have come in very freely.

Iron Ore Situation

Following the changes in finished products announced and anticipated, it is expected that there will be increased pressure for the revision of the ore schedule, but the large ore interests which have long acted in harmony are still doing so with no prospect of changing their determination to adhere to last year's prices. Some interests, which have not heretofore co-operated with the others, may announce lower prices, but nothing definite is now known.

Structural Material

Contracts taken by the principal structural material interest for May were the heaviest for the year, being about 21,000 tons. This interest's contracts for the year have averaged about 16,000 tons per month, against 50,000 tons for the same period last year. The city of Syracuse has closed a contract for 20,000 tons of cast iron pipe, awarded to the United States Cast Iron Pipe & Foundry Co. at about $23.50 delivered. Eight thousand tons for a private interest at Syracuse was taken by this company recently. The city of Cleveland is in the market for about 4,000 tons of cast iron pipe, and New York City will buy 3,000 tons for Staten Island use.

JUDGE GARY'S STATEMENT.

New York, June 2.—Judge Gary says: "Some of the smaller manufacturers of steel bars who have not been in consultation with the larger manufacturers, have been for some time selling steel bars at about 1.40c to meet the bar iron competition, and some of the larger manufacturers have reached the decision that they will meet these conditions when and as required. This conforms to the view of the steel bar committee. It will not affect prices generally nor interfere with the movement in favor of the stability of business conditions."

The steel bar committee met yesterday and the cut became effective today. The reduced price is in force only on business up to the last quarter. There is no standard price on bar iron in the east, hence there can be no counter reductions.

Ore Taxable as Personalty.—Ore taken from underground mines and stored in stock piles awaiting shipment is taxable as personal property, according to an opinion given the Minnesota state tax commission a few days ago by Assistant Attorney General George W. Peterson.

THE WEEK IN IRON CENTERS

PITTSBURG.

Unsettled Conditions Follow the Reduction of Prices of Bars.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., June 2.

Important developments have been following each other closely in the iron and steel market. After a strict observance for about five months of the prices of most finished and semi-finished iron and steel products, the first break in the situation came this week with the announcement of a $4-a-ton reduction in steel bars. The lapse of a few hours from this action brought forth the word that the bar iron makers had followed the lead and had cut their product $3 a ton.

These price changes, particularly that of steel bars, coming so abruptly upon the heels of the meeting of the general iron and steel committee in New York two weeks ago, when the statement was given to the public that the prices then in force could be regarded as fixed and that no further sessions of the committee were believed necessary until fall, has left the trade in a somewhat bewildered state. When reductions were probably least anticipated, they have come and the expectation has naturally been created among buyers that the cut represents but the opening wedge, and that a general readjustment is close at hand. The outcome of the next several weeks promises to be awaited with intense interest.

Makers of steel bars, in explanation of their decisive action at this time, declare that the present is regarded as the favorable moment for the employment of such measures as are calculated to stimulate business. It had been repeatedly stated in the pursuit of the maintenance policy that prices would be reduced at the proper time, if such an impetus was considered essential to the recuperation of the industry.

The implement manufacturers, among the largest consumers of steel bars in the country, have recently been making preliminary arrangements for coming into the market for their last half and yearly requirements and have been demanding lower prices. Rather than make any special concession to these manufacturers, the steel bar committee decided to extend the benefit of any reduction to the entire trade and made the revised schedule operative up to Oct. 1.

The subsequent action of the bar iron makers in cutting their prices promises to have an interesting bearing upon the results of the annual wage conference with the Amalgamated Association of Iron, Steel and Tin Workers, which is now in session.

The week in pig iron has been somewhat less animated than the previous several weeks. The inquiry continues good, but the furnaces are showing more independence as to seeking business at present quotations and are enjoying an improved sentiment. Prices are firm and are displaying a tendency toward a moderate advance.

Pig Iron.—Following the rather spectacular spurt of the past three weeks, pig iron appears to have settled to a less feverish and to a probably sounder basis. The inquiry continues good though not so heavy as it has been and the business being booked is of substantial tonnage. The speculative factor in the situation, however, does not appear so marked. There has been considerable business distributed among the various furnaces and, as a consequence, their position as to stocks and ore payments has been improved, strengthening their ideas as to prices. This covers the situation in the foundry market, especially, where $14.50 valley quotation for prompt shipment, which has been quite general, is now a difficult matter to find and $14.75 to $15 rather represents prompt and third-quarter shipment. It is not infrequent to learn of furnaces staying entirely out of the market for the present, being unwilling to take on any more business at prevailing prices. The Pittsburg district is furnishing a larger inquiry for foundry iron and a number of transactions have been made for third quarter shipment at from $14.75 to $15 furnace. It is undoubted that deals are being quietly made and this renders an accurate estimate difficult to fix upon, but the total movement of foundry iron in this district during the past three weeks has not exceeded 15,000 to 20,000 tons. The largest inquiry out at present is for 3,000 tons for June, July and August.

Less activity is noted in basic, but there is some large business in prospect. The Paige Woven Wire Fence Co. is sounding the market on its next three years' requirements of basic, which, under normal conditions, would not be less than 100,000 tons. It is understood that the Pittsburg Steel Co. has not made any definite arrangements as yet for obtaining its needs for the next several years, a tonnage which with the company's new plant in operation will exceed 150,000 tons annually. The Portsmouth Steel Co. is also inquiring for 6,000 tons for last half. The market at present is $15.50 for delivery through August with higher prices asked beyond that date.

The Bessemer market is lifeless, the only sales reported being in carloads at about $16 valley. The Bessemer average price for May was $16.02 valley or $16.92 Pittsburg, a decline of 57 cents over April, when the average was $16.59 valley and compared with $16.96 valley in March, $17 valley in February and $18.10 valley in January. Malleable is quoted at $15 valley and there is one inquiry in the market for 1,000 tons for northern Ohio.

It is estimated that 250,000 tons of southern iron was sold during May, including about 125,000 tons by the Schloss-Sheffield Steel & Iron Co. Some business is being taken at the new rate of $12 Birmingham for No. 2, about 600 tons having gone to northern Ohio this week. The lowest price heard now in connection with southern iron is $11.75 furnace.

Among the furnaces, Midland, which has been on basic, has gone out. The new Shenango No. 1 stack will be completed and put in blast about July 1. Valley stocks of Bessemer and basic are steadily declining and now approximate 45,000 tons. On prompt and third quarter iron, the higher quotation on Bessemer being for chill-cast, we quote as follows:

Bessemer, valley	$16.00 to 17.00
Bessemer, Pittsburg	16.90 to 17.90
No. 1 foundry, Pittsburg	15.90 to 16.25
No. 2 foundry Pittsburg	15.65 to 15.90
Gray forge, Pittsburg	14.90 to 15.[illegible]
Basic, valley	15.5[illegible] to 15.75
Basic, Pittsburg	16.[illegible] to 16.65

Ferro-Manganese.—A considerable degree of interest is being shown by buyers in ferro-manganese, and the market is quite active. Sales on the week have ranged from carloads to 300 tons and there is one inquiry out for 200 tons for a western interest, several for 200 tons and others for smaller amounts largely from this district. The ferro-silicon market is dull. Prices of ferro-manganese are firm, and we quote 80 per cent ferro-manganese for prompt and future shipment at $46 to $47 Pittsburg.

Imported 50 per cent ferro-silicon is quoted $67 Pittsburg on forward deliveries; domestic 12 per cent, $29; 11 per cent, $28; 10 per cent, $27. The lower grades of imported ferro-silicon are upon about the same basis. These quotations are applicable to Pittsburg territory.

Plates.—No additional life has been added to the plate situation and it continues dull and featureless. Conditions with the ship building and steel car companies have not changed. Official prices are being shaded by several small mills. We quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.70c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds. Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary fire-box steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive fire-box steel, 0.50c; all

sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Extremely low stocks continue with jobbers of sheets with the exception of at far western points where practically normal supplies are in store. Striking instances are cited showing stocks are lighter than they have been for years. There has been little buying by the refrigerator interests as yet. Galvanized sheets continue the most active. We quote:

Black steel sheets, one pass, cold rolled: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.60c; No. 30, 2.70c. Galvanized: Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 3.95c. Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Tin Plate.—No signs of slackening activity in tin plate have yet appeared, and preparations for taking care of the approaching vegetable crop are going forward rapidly among the tin plate and canning interests. The operations of the leading interest have not changed, but the independents if anything are working more mills. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—Some good specifications on rail contracts are being received by the local maker, and the market has a better tone. A great many traction projects are up for consideration, and in the event of their materialization which is almost entirely a matter of financing, a very large tonnage of standard sections will be required. In light rails, May showed a substantial increase over April, and the usual tonnage was booked in the past week. Mill operations are unchanged. A number of the railroads are buying standard spikes, but are limiting their purchases to small amounts for immediate needs. There is no contracting of note for the future. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—Specifications on contracts represent the extent of the present billet movement, and makers are showing no disposition to attempt to force an increased trade. The sheet and tin mills are regularly taking a large tonnage of sheet and tin bars, and the mills rolling this product have fairly full schedules.

We continue to quote Bessemer and open-hearth billets, $28 Pittsburg, and forging billets at $30 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $29.50 Pittsburg, valley and Wheeling territory, and $29 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—The barges have been loaded by some companies for their final shipments of cotton ties to the south. The full extent of the season's movement cannot be determined until the crop comes in about Sept. 1. Hoops are holding out very well, and the cooperage business continues good despite some unfavorable effects received from anti-liquor legislation. We continue to quote the following official prices:

Cotton ties, 85c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 88c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel.

Merchant Bars.—Effective at once, cuts of $4 a ton in steel bar material and $3 a ton in bar iron, have been announced by manufacturers, bringing steel bars down to a basis of 1.40c Pittsburg and bar iron to 1.35c Pittsburg. The reduction in steel bars is accompanied by the provision that this price is not to extend beyond Oct. 1, and that to take advantage of the new rate, buyers must contract and specify their tonnage by that date. This cut also applies to channels, tees, and angles under three inches, which are dropped from 1.70c to 1.50c Pittsburg. Considerable pressure for a reduction of steel bar prices has been brought to bear by implement manufacturers who are about to enter the market for their last half and yearly requirements, beginning July 1. The steel bar makers also declare since it had been repeatedly stated there would be no price reductions until the proper time, if at all, that the present had been determined as the opportune moment for such action. Following close upon the announcement of the steel bar interests, the western bar iron makers, at a meeting Tuesday, reduced their product $3 a ton. We have revised our prices and quote as follows:

Common iron bars, 1.35c Pittsburg in carload lots and over; 1.40c in less than carloads; 1.32½c to 1.35c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3 inches, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 56 per cent in carloads, and 52 per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by 1½ inches and over, 1.60c. All tire subject to ½ extra on the steel card.

On cold rolled strip steel, width 1½ inches and wider and 0.100 inch and thicker, we quote base prices per 100 pounds, $3.60 on hard and $3.75 on soft.

Structural Material.—The structural situation continues as it has been. Inquiries are fairly plentiful and estimating departments are busy, but contracts being placed are comparatively few. This condition is resulting not so much from the matter of prices as from finances. Recent contracts awarded in this district have commanded some very low prices from fabricators. The Carnegie Steel Co. has taken the order from the McClintic-Marshall Construction Co. to furnish about 10,000 tons of the 13,500

tons of steel required for the Pittsburg & Lake Erie bridge at Beaver, Pa., and the Jones & Laughlin Steel Co. will supply the remainder. The Carnegie Steel Co. will roll the 5,000 tons of steel for the Delaware & Lackawanna shops, Scranton, Pa., which was also taken by the McClintic-Marshall company. The Interstate Engineering Co., Bedford, O., has taken the contract for 550 tons for the new plant of the Crescent Portland Cement Co. at Wampum, Pa., and the Youngstown Wire & Iron Co. will supply a similar tonnage for the new court house at Youngstown. O. Structural steel prices are unchanged, and we quote:

Beams and channels, 15-inch and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.75c; angles from 3 to 6 inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.70c base.

Merchant Pipe.—Immediate requirements still govern the purchases of jobbers in merchant pipe, but the market has a good undertone and makers are not discouraged. The tendency of the market is in the right direction, but the improvement is not marked. A local gas interest which has been preparing to enter the market for a large line pipe requirement has definitely decided on the purchase of from 40 to 50 miles of 12-inch, and will likely take a considerable amount of 16-inch later. Some reports of shading in iron pipe are heard. The situation on steel pipe is firm. We continue to quote the following official discounts to consumers in carloads, with an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	65	49	63	..
⅜ inch	67	53	65	51
½ inch	69	57	67	55
¾ to 6 inches.....	73	63	71	61
7 to 12 inches.....	70	55	68	53
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	58	46	56	44
½ to 4 inches.....	65	53	63	51
4½ to 8 inches.....	61	49	59	47
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inches.....	54	43	52	41

Boiler Tubes.—The boiler tube market is quiet at the present time and buying continues for absolute needs. We continue to quote the following discounts:

	Iron.	Steel.
1 to 1½ inch.....	42	47
1¾ to 2¼ inch.....	42	59
2½ inch	47	61
2¾ to 5 inch.....	52	65
6 to 13 inch.....	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Wire Products.—With the active spring season in nails and wire at an end, the trade in wire products is showing less activity than for the past several months. Jobbers' and manufacturers' stocks are low, and there promises to be more or less buying for replenishment in accordance with consumption during the summer months. We quote as follows:

Wire nails, jobbers' carload lots, $2.05; retailers' carload lots, $2.10; less than carloads, $2.15; painted barb wire, $2.20 for jobbers in carloads; retailers in carloads, $2.25c; and less than carloads, $2.35, with 30c for galvanizing; plain wire, 1.90c for jobbers, and 1.95c by carload.

Wire Rods.—Specifications on contracts constitute the principal movement in wire rods, and we quote nominally $35 Pittsburg on Bessemer and $36 Pittsburg on open-hearth rods.

Coke.—The movement of foundry coke has improvement somewhat, consisting of some gain in prompt buying and larger specifications against contracts. In view of this development some of the independents are putting on more ovens this week. The Westinghouse Electric & Mfg. Co. and the Westinghouse Machine Co. are in the market for their annual requirements of foundry coke, which under normal conditions would approximate 20,000 tons. There are also several good sized inquiries out for furnace coke, including one for three months' requirements by a Cleveland interest. The other Cleveland furnace mentioned last week as negotiating for its annual requirements has not yet closed. The *Courier* for the week of May 16 to 23 shows 14,369 ovens active, with a production of 169,888 tons, compared with 14,658 ovens and 173,082 tons the preceding week. We continue to quote standard Connellsville foundry coke at from $2 to $2.25 ovens, and standard Connellsville furnace coke at from $1.65 to $1.75. Some operators are showing reluctance to quote at these figures.

Old Material.—The present low prices in old material have attracted to the market a greater buying movement by steel foundry interests which has been largely of a speculative character. The past week has seen considerable buying of low phosphorus scrap from the mills and some of the latter are now holding this grade at an $18.50 minimum. There has also been some purchasing by dealers to cover for their recent sales to the American Steel Foundries, but the market generally cannot be said to have gained much vigor. The Pennsylvania Lines west are offering 5,000 tons and the Wheeling & Lake Erie 500 tons. Asking prices are higher and we quote, delivered to the Pittsburg district, as follows:

Heavy melting scrap, $12.75 to $13.25; re-rolling rails, $14 to $14.50; bundled sheet scrap, $9 to $9.50; iron axles, $18.50 to $19.50; old iron rails, $15 to $16; No. 1 wrought scrap, $13.25 to $13.75; old car wheels, $13 to $13.50; low phosphorus scrap, $17.50 to $18; machine shop turnings, $8 to $8.50; cast borings, $7.50 to $8; No. 1 cast scrap, $13.75 to $14.25.

CHICAGO.

Doubt as to Effect of Reduction on Bars—Decreased Buying of Pig Iron.

Office of THE IRON TRADE REVIEW, 1328 Monadnock Block, June 2.

Coming without notice at the beginning of the present week, the cut of $4 a ton in steel bars and kindred material developed a new phase in the finished material market. Just how the situation will be affected has not yet been shown, but if any reductions in price are desirable, in the cause of encouraging buying, this action should prove timely in connection with the seasonal purchases of bars by implement manufacturers. Interest in pig iron has not entirely abated and a fair tonnage of iron was placed in small lots well distributed, though the activity was much less than before prices were raised to the present level of $12 Birmingham for No. 2. No sales are reported where more than 2,500 tons was sold in one lot. Prices are firm and there is little business being taken now for the fourth quarter. The foundry melt is not improving at present, but it is believed a considerable part of the iron bought was taken in anticipation of approaching purchases by western railroads. Structural steel buying was very light and in all of the finished lines there were very few transactions of interest. The month of May showed improvement of small degree in most lines, but offered no striking contrasts. Coke is firmer in tone and price and the scrap market has responded to the buying of dealers with a general rise in prices.

Pig Iron. — The buying of pig iron was not in so large volume during the past week as in the two preceding. A number of consumers continued to come in the market for small amounts, but there were practically no tonnages placed which exceeded 2,000 tons and the iron was well distributed. Prices for shipment through the third quarter are very firm at $12 for No. 2 Birmingham basis with most of the furnaces asking $12.50 for fourth quarter. Some prompt shipment iron was sold for June delivery and on this it is understood $11.50 was done. A round tonnage of malleable Bessemer was bought from a northern

furnace and a general impression prevails, based on the necessity for moving the crops, that the western railroads at least must increase their buying materially. The hope of an increase in the foundry melt is founded on this. With a continuance of the present minimum melt, the readiness with which consumers will accept deliveries and the firmness of prices for prompt shipment iron are problematical. We quote for delivery through the third quarter, f. o. b. Chicago, as follows:

Lake Superior Charcoal	$19.50 to 20.00
Northern Foundry No. 1	18.00 to 18.50
Northern Foundry No. 2	17.50 to 18.00
Northern Foundry No. 3	17.00 to 17.50
Southern Foundry No. 1	16.35 to 16.85
Southern Foundry No. 2	15.85 to 16.35
Southern Foundry No. 3	15.35 to 15.85
Southern Foundry No. 4	14.85 to 15.35
Southern No. 1 Soft	16.35 to 16.85
Southern No. 2 Soft	15.85 to 16.35
Southern Gray Forge	14.35 to 14.85
Southern Mottled	15.10 to 15.60
Southern Silveries, 4 per cent Silicon	17.85 to 18.35
Southern Silveries, 5 per cent Silicon	18.35 to 18.85
Southern Silveries, 6 per cent Silicon	19.35 to 19.85
Jackson Co. Silveries, 6 per cent	18.90 to 19.40
Jackson Co. Silveries, 8 per cent	20.90 to 21.40
Jackson Co. Silveries, 10 per cent	22.90 to 23.40
Malleable Bessemer	17.25 to 17.75
Standard Bessemer	18.25 to 18.75
Alabama Basic	15.85 to 16.35

Billets and Rods.—Some few inquiries for billets appear in the market, but the movement is practically confined to the taking of small lots of forging billets on contract. Prices are uniformly as quoted except where billets were contracted for on a sliding scale. The situation is unchanged with regard to rods. We quote for Chicago delivery, rolling billets, $29.50, forging billets, $31.50. Wire rods, we quote, Bessemer, $35, open-hearth, $36; chain rods, $37, f. o. b. Pittsburg.

Plates.—The demand for plates has not improved and orders are limited to occasional small lots. We quote for Chicago delivery as follows:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.88c to 1.91c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2.10c to 2.20c; from 72 to 96 inches wide, 2.20c to 2.30c; 3/16-inch up to and including 60 inches wide, 2.20c to 2.25c; 72 inches wide, 2.45c to 2.55c; No. 8, up to 60 inches wide, 2.20c to 2.25c. Flange and head quality, 25c extra.

Sheets.—The volume of trading in sheets was less in May than in the preceding month due to the sharp slump in demand in the last two weeks of the month. At the present time activity is confined almost entirely to roofing sheets, galvanized and painted. The active mill capacity is in the neighborhood of 40 per cent of normal. For mill prices see Pittsburg report. We quote Chicago prices from store as follows:

No. 10, 2.20c to 2.25c; No. 12, 2.25c to 2.30c; No. 14, 2.30c to 2.35c; No. 16, 2.40 to 2.50c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, No. 10 to 16, 3.05c to 3.15c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

Structural Steel.—The week witnessed the placing of but little structural tonnage, all that was reported being 600 tons of bridge girders for the Chicago, Milwaukee & St. Paul railroad. Half of this was taken by the Minneapolis Steel & Machinery Co. and half by the Wisconsin Bridge & Iron Co. There is up for estimates a considerable quantity of railroad bridge materials spread out in small tonnages and aggregating about 1,500 tons. The Sanitary Commission has withdrawn its request for bids covering the reconstruction of the large railroad bridge over the drainage canal of which mention was made two weeks ago and it is understood that a new bridge will be substituted for the present one. A movement to make use of the canal as a navigable channel will probably result in the necessity for a quantity of bridge material. We quote as follows:

Beams and channels, 3 to 15 inches inclusive, 1.88c to 1.91c delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles over 6 inches, $2.15 per 100 pounds base; beams, 3 to 15 inches inclusive, $2.05 per 100 pounds, base; channels, 3 inches and larger, $2.05 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—The feature of the week was the filing of specifications by the Illinois Central railroad for 52,000 tons of 90-pound rails on its contract with the leading interest. Of this 10,000 tons will be rolled by the Illinois Steel Co. at South Chicago and the balance 42,000 tons, all open-hearth by the Tennessee Coal Iron & Railroad Co. The demand for light rails also keeps up fairly well and the month's tonnage is the largest of the year. The tonnage of spikes and bolts contracted for during May was also fair and the sales of angle bars were very satisfactory. The Pennsylvania Steel Co. sold 800 tons of high tee rails to the United Railway Co., Detroit. We quote as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound, $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.65c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.30c to 2.40c; with hexagon nuts, 2.45c to 2.50c. Small railroad and square boat spikes, 1.90c base, f. o. b. Pittsburg.

Merchant Pipe and Boiler Tubes.—For mill prices see Pittsburg report.

We quote prices from store unchanged as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

	—Steel— Black.	Galv.
¼ to 6 inches, inclusive	71.2	61.2

BOILER TUBES.

	Steel.	Iron.	Seamless.
2¼ to 5 ins., inclusive	63.2	50.2	49.2

Store prices for wrought iron pipe, carload lots, from Chicago stocks, are as follows: One-eighth to ¼-inch 59; ⅜-inch, 61; ½-inch, 63; ¾-inch to 6 inches, 68; 7 inches to 12 inches, 65. Boiler tubes from store are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	35	35	35
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	35
2¾ to 5 inches	60	47½	47½
6 inches and larger	50	35	..

Cast Iron Pipe.—The routine volume of small orders for pipe aggregated a good tonnage during the week, but there were no large municipal lettings. A 600-ton contract is to be placed at Cincinnati this week. We quote 4 to 6-inch pipe, $27; 6 to 16-inch, $26; larger sizes, $25; gas pipe, $1 a ton higher.

Wire Products.—The trade in wire products has been gradually shrinking to midsummer volume. Wire cloth continues in good volume, but business generally has become quite dull. We quote:

Wire nails, $2.23; painted barb wire, $2.38; galvanized barb wire, $2.68; smooth annealed wire, $2.08; smooth galvanized wire, $2.38; polished staples, $2.23c; galvanized staples, $2.63. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

Coke.—Prices of furnace coke are reported much more firm in response to the heavy buying and the majority

of interests are holding at $1.85 at the ovens for standard Connellsville. There is no large business being placed in this territory, the price change being in sympathy with large sales elsewhere which have taken up the oven capacity. Foundry coke prices also are stiffer and we quote for standard grades $2.15 to $2.25 at the ovens.

Old Material.—Prices of scrap have advanced under the influence of the buying by dealers. General evidences of a prospective betterment in the consumption are being found in the present situation sufficient to influence purchases by dealers at prices that consumers will not pay. The mill situation at this time lacks any appearance of supporting the advance which we quote, but the following prices are being paid in the effort to accumulate stocks. Scrap yards are crowded with material and the continued strength of the market is largely dependent on the ability to find place to hold material offered in the market. Rerolling rails continue to bring good prices. We quote as follows gross tons in the first paragraph:

Old car wheels	12.50 to 13.00
Old iron rails	15.50 to 16.00
Re-rolling rails (3 ft. and over)	13.50 to 14.00
Old steel rails (3 ft. and under)	12.25 to 12.75
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	11.75 to 12.25
Heavy melting steel	11.50 to 12.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.25 to 11.75
No. 2 R. R. wrought	10.00 to 10.50
Knuckles, couplers and springs	11.00 to 11.50
Shafting	14.00 to 14.50
Iron car axles	16.50 to 17.00
Steel car axles	15.00 to 15.50
Dealers' forge No. 1	9.50 to 10.00
Pipes and flues	7.75 to 8.25
No. 1 cast, 150 lbs. and less	11.75 to 12.25
No. 1 mill	6.75 to 7.25
Mixed busheling (Nos. 1 and 2)	6.75 to 7.25
Country sheet	5.25 to 5.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	10.00 to 10.50
Cast borings	4.50 to 5.00
Mixed borings, etc	4.50 to 5.00
Machine shop turnings	5.25 to 5.75
Railroad malleable	10.25 to 10.75
Agricultural malleable	9.50 to 10.00
Stove plate and light cast scrap	10.00 to 10.50
Old iron splice bars	13.75 to 14.25

CLEVELAND.

Starting of Vessels Delayed—Pig Iron Active—Finished Lines Dull.

Office of THE IRON TRADE REVIEW, Browning Building, June 2.

Iron Ore.—At a meeting of vessel interests held Monday, it was decided to hold all boats in port until June 16, with the exception of a few that will be compelled to deliver on contract cargoes. Another meeting will be held June 16, when it is probable that the start will again be postponed until July 1.

Owing to the reduction in prices of steel bars and bar iron, and the belief that the prices of other finished materials will be reduced, it is expected that the pressure for lower quotations on ore will be stronger, and it is possible that some ore will be sold at reduced prices, but the leading ore interests, which have usually acted in harmony, are still firm in their determination not to change their schedule.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range, Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20, and Mesabi non-Bessemer, $4.

Pig Iron.—Many sales aggregating a large tonnage have been made within a few days, and inquiry is still active. The sales include all grades except Bessemer. A sale of 6,000 tons of basic was made to a Canton, O., interest, part of the tonnage going to an interest which has not until recently been a seller of pig iron. A sale of 1,000 tons, 2.50 per cent silicon, was made to a Cleveland foundry at $16.50. A purchase of 2,500 tons of malleable was made by a Connecticut interest through a Cleveland agency. Several sales of foundry iron of from 500 to 1,000 tons each are reported. For Cleveland delivery we quote as follows:

Bessemer	$16.90 to 17.10
No. 1 foundry	16.50 to 16.75
No. 2 foundry	16.15 to 16.25
No. 3 foundry	15.75 to 16.00
No. 2 southern	16.35
Gray forge	14.50 to 15.00
Lake Superior charcoal	19.50 to 20.00

Coke.—One furnace has contracted for its requirements for last half, and some other inquiries for furnace coke are pending. The demand for foundry coke is limited and prices are somewhat firmer. We quote $1.75 to $1.85 at the ovens for furnace coke, and $2.25 for high grade foundry coke.

Finished Material.—The announcement of a reduction of $4 per ton on the price of steel bars, following the positive declarations of last week by the leading interests that prices on all finished material would be maintained, came as a distinct surprise. Buyers generally expressed themselves as pleased, but there was general inquiry as to what action would be taken concerning old contracts. Selling interests were not prepared to give positive assurances, but it is generally understood that steel bars purchased on contract will be delivered at the new prices. Following the reduction in the price of steel bars, a reduction in the price of bar iron to $1.35 Pittsburg, was announced, and it is generally expected that prices of billets, plates and shapes and other materials will be reduced. Prior to the announcement of the new prices of steel bars, there has been some improvement in inquiry and new business, but since that announcement, everything is unsettled and practically no business is being done. Prices of steel bars in recent years have been changed as follows: February, 1902, raised from 1.20c to 1.60c; Nov. 16, 1903, reduced from 1.60c to 1.30c; March 4, 1904, advanced to 1.35c; Dec. 20, 1904, advanced to 1.40c; Feb. 28, 1905, advanced to 1.50c; Nov. 15, 1906, advanced to 1.60c, which was the price until Monday.

Old Material.—Some improvement in the movement of stock became apparent during the past week, and a stronger undertone was made visibly manifest by advances on steel stock from 25 cents to $1 a ton. The appearance of good sized railroad lists, the usual first-of-the-month offering, does not seem to have had appreciable effect upon the stronger market. We quote, f. o. b. Cleveland, as follows:

Old iron rails	$14.50 to 15.00
Old steel rails (re-rolling)	13.00 to 13.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old car wheels	12.50 to 13.00
Old steel boiler plate	10.50 to 11.00
Steel axles	16.00 to 17.00
Malleable iron (railroad)	12.00 to 12.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.25 to 12.75
Country mixed steel	10.00 to 10.50
Low phosphorus	14.00 to 14.50

NEW YORK.

Satisfactory Inquiries for Pig Iron—Bar Iron Prices Irregular.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., June 2.

Pig Iron.—The eastern market is still featured by a very satisfactory run of inquiries, practically all speedily developing into business, but there are indications that the buying movement is quieting down and experienced pig iron men are looking for the early coming of the summer dullness. There is still, however, plenty of activity in the market. Aside from numerous inquiries of 500 tons and smaller, one railroad supply interest is in the market for 5,000 tons of foundry for early shipment and another is asking tenders on about 2,500 tons of various irons, with a moderate tonnage of alloys. Northern irons are at about the level of a week ago. For southern irons, however, $12, Birmingham, now appears to be the low level for No. 2 for prompt and third quarter shipment. For later delivery, a premium of 50 cents to $1 is asked and furnaces are not especially interested even at that figure. No very dependable estimate of the tonnage placed

last week in this territory is obtainable. One authority places it at 50,000 tons. To a considerable degree it has been bought on speculation, as little improvement is to be discovered in the foundry melt, but consumers are willing to back up their belief that present prices are rock-bottom by taking an early delivery on last half requirements to avoid the premium asked for last quarter. Basic and gray forge are comparatively quiet. We quote New York tidewater delivery, prompt and third quarter shipment, as follows:

Northern foundry No. 1	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	16.00 to 16.50
No. 2 southern foundry	16.00 to 16.50
Malleable	17.50 to 18.00
Basic	16.00 to 16.50
Gray forge	16.00 to 16.50

Ferro-Manganese.—The market is firm, with inquiries current amounting to perhaps 2,000 tons, all in small lots. For prompt shipment the level is about $44, seaboard. On last half deliveries as high as $47 is being asked, but what business is being done is at about a $45 level.

Finished Materials.—Bookings of the leading structural interest during May were the heaviest of the year, aggregating about 21,000 tons, to which the chief contributions were the La Salle hotel and the New York Central freight terminal work. For the year so far, this interest has taken about 80,000 tons, an average of 16,000 tons per month, as compared with an average of about 50,000 tons for the same period last year and nearly 60,000 tons for 1906, the banner year in its history. An eastern independent interest during May booked a tonnage equal to that taken during the previous four months and reports considerable business pending. In fact, there are indications that a fair tonnage will develop throughout the summer. In this city, bids are being asked on the steel for the Farmers' Trust building, about 2,000 tons.

Finished Material.—The new assay building on Wall street, requiring about 1,000 tons of steel, has been taken by the McClintic-Marshall Construction Co. The Hotel Astor addition, 4,000 tons, and the office building to be erected on the site of the old Sinclair house, requiring something over 1,000 tons, will be closed shortly. Receivers of the New York street railway system are to build a car barn up town, for which 500 tons of steel will be needed, and about 1,300 tons are involved in the contract for a Long Island viaduct to be built by the Pennsylvania Tunnel & Terminal Co.

Plate business is slightly better, with prices well maintained. The Long Island water works extension, requiring a heavy tonnage, is tied up by right of way difficulties and will probably not be closed for a considerable time. In bar iron there is little activity and prices are irregular, ranging down to about 1.30c, eastern mills, for good quantities. The billet situation is lifeless. We quote:

Old Materials.—The sale of 4,000 tons of heavy melting steel to an eastern Pennsylvania interest is reported, together with a sale of 300 tons of old steel girder rails at ruling prices. There is little change either in prices or activity. The smaller dealers are well cleared up, but several of the larger concerns are carrying heavy accumulations of scrap, much of which was taken on at such a high level as to render it improbable that they can dispose of it without a loss in the early future. We quote, gross tons, New York delivery, as follows:

Old iron rails	$13.50 to 14.00
Old steel rails, re-rolling	14.00 to 14.50
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old iron car axles	16.00 to 16.50
Old steel car axles	15.00 to 15.50
Heavy melting steel	10.50 to 11.00
No. 1 railroad wrought	13.00 to 13.50
Iron track scrap	11.50 to 12.00
Wrought pipe	9.00 to 9.50
Cast borings	5.00 to 5.50
Wrought turnings	7.50 to 8.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	9.00 to 9.50
Stove plate	9.00 to 9.50
Grate bars	9.50 to 10.00

CINCINNATI.

Price of Southern Pig Iron Advances —Inquiry for Basic.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., June 2.

Pig Iron.—Under the influence of buying and inquiry, southern pig iron has advanced to a basis of $12 Birmingham for No. 2 foundry, for prompt shipment and third quarter. In some instances, this price is applicable to the entire second half, but a number of the southern producers are unwilling to make commitments beyond the third quarter and some are asking an advance of 50c to $1 per ton for fourth quarter. The market is considerably unsettled and some firm offers on the basis of $11.50 Birmingham are still being submitted by furnace agents, but so far as can be learned nothing below $12 is now being put through. There is considerable inquiry still pending, which aggregates a considerable tonnage, but a large part of the inquiries now ask for deliveries extending into the fourth quarter and some even into next year. While there have been some sales made on the $12 basis for third quarter, it is not yet clear that buyers will come in at the advance with the same freedom that they did on the lower levels. There appear to be three divisions of a buying movement, the first being the voluntary demand, the second that brought out under salesmanship; and the third the belated buyers who have hesitated. The voluntary demand seems to have subsided to considerable extent and the results of business induced by salesmen for the next week or two will be awaited with considerable interest. The inquiry for basic iron continues to be a feature of the market and an Ohio melter is figuring on 6,000 tons in the last half. There is an inquiry for 1,000 tons of malleable for last half delivery. A Michigan buyer is asking for prices on 5,000 tons for extended deliveries. From the southern furnace standpoint, the market appears strong, as two important producers claim to be sold up for the third quarter and 11 furnace companies are not quoting at all, being out of blast and having no iron on the yard and nothing to offer. One large producer has advanced its price to $12.50. While there is considerable southern iron still available, the amount of business taken has placed the southern producers in a stronger position to maintain prices than they have occupied for some time. Northern iron in Southern Ohio shows but little change, but sales during the week have been made at $15 furnace for No. 2 foundry. Most of the producers, however, in the Ironton district are unwilling to accept business at less than $16 and have sold but little iron. To what extent the present buying movement may be regarded as speculative will develop in the third quarter, when it will be seen how melters take the iron on their contracts. At present the melt shows but slight improvement in this territory. We quote for prompt shipment and third quarter delivered Cincinnati, based on freight rates of $3.25 from Birmingham, and $1.20 from Ironton, as follows:

	PER TON
Southern foundry No. 1	$15.75 to 16.25
Southern foundry No. 2	15.25 to 15.75
Southern foundry No. 3	14.75 to 15.25
Southern foundry No. 4	14.25 to 14.75
Southern No. 1 soft	15.75 to 16.25
Southern No. 2 soft	15.25 to 15.75
Southern gray forge	13.75 to 14.00
Northern No. 1 foundry	16.70 to 17.70
Northern No. 2 foundry	16.20 to 17.20
Northern No. 3 foundry	15.70 to 16.70
Northern 8 per cent silicon	19.70 to 20.20

Coke.—The market has been slightly more active and some contracts have been placed for foundry coke running through the remainder of the year and some extending to next July.

Some furnace coke has also been purchased. While the market is not quotably changed, there is some tendency on the part of the ovens to withdraw recent minimum prices and the market is a shade firmer. Quotations in the leading coke producing districts are as follows:

	PER TON
Wise county furnace coke	$1.75 to 2.00
Wise county foundry coke	2.10 to 2.25
Pocahontas furnace coke	1.75 to 1.85
Pocahontas foundry coke	2.00 to 2.25
Connellsville furnace coke	1.65 to 1.90
Connellsville foundry coke	2.00 to 2.25

Old Material.—The market is dull and easy with dealers carrying liberal stocks and melters showing but little interest in the market. Scrap iron does not appear to have been stimulated by the activity in pig iron. We quote dealers' prices here as follows:

Old No. 1 R. R. wrought, net tons	$11.00 to 12.00
Cast machine and fdy., net tons.	12.00 to 12.50
Old iron rails, gross tons	13.50 to 14.00
Old steel rails (re-rolling) gross tons	12.75 to 13.25
Old short lengths, gross tons	12.00 to 12.50
Old iron axles, net tons	15.50 to 16.50
Heavy melting scrap, gross tons	12.00 to 12.50
Stove plate, net tons	9.50 to 10.50
Wrought turnings	5.00 to 6.00
Cast borings, net tons	4.00 to 4.50
Car wheels, gross tons	13.00 to 14.00

ST. LOUIS.

Sales of Malleable and Other Grades of Pig Iron.

June 1.

Pig Iron.—Orders continued to come to the St. Louis territory last week for delivery over the third and fourth quarter based on prices ranging from $12 to $12.50 Birmingham, for No. 2. The price of $11.50 has entirely disappeared from this market and $12 is the minimum quotation offered. This price will apply especially on third and fourth quarter business with most of the furnaces holding out for higher figures covering delivery over the last quarter. Some of the larger furnace interests are asking $12.50 for all deliveries, while a few furnaces have withdrawn entirely from the market, having recently sold a large tonnage of iron for shipment during the third and fourth quarters especially. Among the most important furnaces that have withdrawn is that of the Birmingham Coal & Iron Co., manufacturing the Vanderbilt brand. One inquiry has been received in St. Louis for 2,000 tons of pig iron for shipment over the first half of 1909. This probably is only a feeler, but the buyer insisted that if the price were what he considered in line, the iron would be purchased. The 5,000-ton order for basic is still unplaced, but probably will be closed this week. One of the large malleable foundries in this territory bought something like 5,000 tons last week for shipment over the last half of the present year.

Our quotations, delivered, to which the $3.75 freight from Birmingham has been added, follow:

No. 1 southern	$16.25 to 16.75
No. 2 southern	15.75 to 16.25
No. 3 southern	15.25 to 15.75
No. 4 southern	14.75 to 15.25

Coke.—The coke market is firmer but without advance in prices. More small orders were booked last week than have come to St. Louis for some time, with several inquiries pending for larger tonnage for foundry and smelter coke. The best quality of 72-hour Connellsville foundry coke is quoted at $2.15 to $2.50, ovens, for spot and future delivery. Furnace coke, 48-hour Connellsville, is quoted at $1.50 to $1.75, ovens.

The best Virginia and West Virginia foundry coke is quoted at $2.50 ovens, and furnace at $1.50 to $1.75.

The freight rate from the Connellsville and Virginia fields is $2.80 to East St. Louis, $2.90 to St. Louis and $2.40 when destined beyond St. Louis.

Old Material.—The market remain about the same, with quotations as follows:

Cast iron borings, free from foreign material, net ton	$ 4.50
Steel axle turnings, net ton	8.00
Steel railroad axles, net ton	13.50 to 14.00
Iron railroad axles, net ton	15.50
Miscellaneous steel scrap, gross ton	10.25
Old car wheels, gross ton	14.00 to 14.50
No. 1 railroad cast scrap, net ton	11.00
Heavy machinery cast, net ton	12.00
Stove plate and light cast, net ton	10.00
Sheet iron, net ton, uncut	3.50
No. 1 railroad wrought, net ton	10.50 to 11.00
Railroad malleable, net ton	11.50
Heavy melting steel, net ton	10.00

The St. Louis Blast Furnace Co. expects to blow in its stack during the present month. It is represented by the DeCamp Bros. & Yule Iron, Coal & Coke Co.

The western agency for the Birmingham Coal & Iron Co., manufacturing the Vanderbilt brand at Birmingham, Ala., has been placed with the DeCamp Bros. & Yule Iron, Coal & Coke Co. at St. Louis. This furnace now has two stacks, one of which was just completed with the most modern improvements and with a capacity of 250 tons a day.

PHILADELPHIA.

Improvement in Pig Iron Continues—Finished Lines Dull.

Office of THE IRON TRADE REVIEW,
408 Central Trust Bldg., June 2.

Pig Iron.—The improvement in buying and inquiries that began a fortnight ago still continues, and a considerable amount of iron, principally of the foundry grades, has been disposed of. The most encouraging feature of the situation is that this buying seems based upon an actual increase of new business among the consumers. This increase is not large, so far as can be learned, but it exists, and, combined with a somewhat speculative desire to take advantage of low prices and thus protect future business, is responsible for the present improvement in the trade. The pipe founders are in the market for a large amount of iron, not far from 10,000 tons, most of which is expected to go to southern furnaces. Other large consumers are also putting out inquiries for supplies covering the rest of the year, but there is not much disposition to take such business except at an advance for the last quarter. The fact is that production is at such a low point that no very large amount of business can be taken without increasing the furnace capacity, and it is not desired to do this until accumulated stocks have been pretty well worked off and the basis laid for an advance in price. The present figures are so low that there is no profit in them for most eastern furnaces. One well-known company has closed its last furnace rather than sell at market figures. A rather curious incident of the situation is the blowing in this week of the old Durham furnace at Riegelsville, Pa., which is to be operated by the receiver of the lessees until the material on hand is used up. This is an old-timer, formerly operated by Cooper & Hewitt, and when it was blown out some time ago, it was thought its usefulness was ended. Prices are held with great firmness, and nothing can be done under $16.75 for No. 2X foundry, except for inferior irons. Prices show substantially no change as follows:

No. 1X foundry	$17.25 to 17.75
No. 2X foundry	16.75 to 17.25
No. 2 plain	16.25 to 16.75
Standard gray forge	15.25 to 15.75
Basic	16.00 to 16.50
Low phosphorus	21.00 to 22.00
No. 2 Birmingham	15.50 to 16.25
No. 2 Virginia	16.75 to 17.25

Finished Material.—Buyers were more disposed to come into the market before the announcement of the $4 reduction on steel bars was made. All are now hesitating. Prices are as follows: Structural material, 1.85c to 2c, according to specifications; steel plates, 1.85c to 1.90c; refined iron bars, 1.45c to 1.55c; steel bars, 1.55c to 1.60c.

Old Material.—There is a better demand for scrap, the mills showing more disposition to buy and cover prospective requirements, and prices have accordingly advanced in some lines. They may be quoted as follows:

Old steel rails	15.00 to 15.50
No. 1 steel scrap	13.50 to 14.00
Old steel axles	17.00 to 17.50
Old iron axles	19.50 to 20.00
Old iron rails	17.00 to 17.50
Old car wheels	13.50 to 14.00
Choice scrap R. R. No. 1 wrought	15.50 to 16.00
No. 1 yard scrap	13.00 to 13.50
Machinery scrap	13.50 to 14.00
Low Phosphorus scrap	17.50 to 18.00

Wrought iron pipe	11.50 to 12.00
No. 1 forge fire scrap	11.00 to 11.50
No. 2 forge fire scrap, ordinary	9.00 to 10.00
Wrought turnings	9.50 to 10.00
Axle turnings, heavy	10.50 to 11.00
Cast borings	9.00 to 9.50
Stove plates	11.00 to 11.50

BUFFALO.

Pig Iron Prices Firmer—Finished Lines Very Dull.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, June 2.

Pig Iron.—Under the more active demand of the past 10 days, prices show a tendency to harden and the market on the whole has a better tone. Counter propositions made in answer to inquiries, which a few days ago were refused or ignored, are now being given consideration. Furnace men feel that bottom has been dragged and that better things are in order. Inquiry is broader and more general and indicates an awakening demand in lines that have been dormant for months. The widest divergence in prices is in malleable Bessemer, the range being from $16 to $17.30 Buffalo, and it is possible that as low as $15.75 Buffalo might be done. Charcoal is quoted 50 cents lower than last week. It is estimated that the sales of the past week or 10 days in this territory have totaled between 40,000 and 45,000 tons. B and C stacks of the Buffalo Union furnaces of M. A. Hanna & Co. have been put in blast. A is out. We quote f. o. b. Buffalo as follows:

No. 1X foundry	$16.50 to 17.00
No. 2X foundry	16.00 to 16.50
No. 2 plain	15.50 to 16.00
No. 3 foundry	15.00 to 15.50
Malleable Bessemer	16.00 to 17.30
Gray forge	15.00 to 15.50
Charcoal	20.50 to 21.00

Finished Materials.—The market in finished lines is quieter. The Buffalo Structural Steel Co. has been awarded the contract for the erection of about 225 tons of structural for a new Masonic temple at Dunkirk, the material to be furnished by the Lackawanna Steel Co. The opening of bids at Albany for the new building for the state department of education and the state library, involving about 12,000 tons of structural, has been postponed from June 2 to June 22; and similarly the opening of bids by the Hydro-Electric commission of Ontario, Canada, for the erection of power transmission towers through the provinces from Niagara Falls has been postponed to July 15. The latter involves about 5,500 tons of light material.

The Woodstock furnace has blown out its "B" stack for relining. Its "A" stack is under repairs and will be ready for operation about Aug. 1.

BIRMINGHAM, ALA.

Preparing to Increase Production—Prices Advancing.

June 1.

A complete change has come over the conditions in the iron market in the southern territory. Not only is there a better demand and sales being made right along but quotations are improving rapidly and indications point to a better price being obtained than for several months before long. Sales of iron made so far will come near covering the probable make for the third quarter of the year if there is no improvement in the make. However, preparations are now under way looking to an immediate improvement in the production and by the middle of the month six furnaces will be on which are now idle, three making basic iron and three producing foundry iron.

During the past week there was quite a large tonnage of iron sold, delivery during the next four months. Quotations were not under $11.75 per ton for the greater portion of the product sold while quite an amount brought $12 per ton, No. 2 foundry.

W. H. Hassinger, former vice president and southern manager of the Republic Iron & Steel Co., will be the first president of the reorganized Southern Steel Co., bankrupt. He has been suggested by the larger number of the reorganization committee of the company and he is rendering much assistance in the work attending the reorganization.

GERMAN MARKET.

No Improvement in Conditions—Outlook Discouraging.

Dusseldorf, May 15.—If the situation of our market has changed at all during the last fortnight, it was only for the worse. Works continue to throw the ready material on the markets of England and generally abroad at any price, whilst the prices for the raw products and half finished materials are kept high in the inland. The efforts for building up new syndicates for the sale of bar iron and sheets have had no result.

Stocks are growing everywhere very strongly and the quantity of pig iron lying in stock at the different works of the Rhenish-Westphalian district is estimated to exceed 800,000 tons. Nevertheless, the German production of pig iron during March has been about 1,000,000 tons, which means only a small decrease in comparison with the previous years. These statistics look strange on first thought, but they are explained by the fact, that our big works must keep their furnaces in fire in order to get sufficient gas to drive their machines in their rolling mills, steel works and construction plants.

The situation of our ready material industry has in the meantime become so very critical, that the only way to keep the works going is to regulate the policy of our syndicates by supervision by the government. For this purpose a great number of works, depending for their raw material on the pig iron syndicate and the Stahlwerksverband have applied to the Reichstag, but owing to the slow operation of our policy, it will take a very long time until a practical result appears. The best illustration for the situation of these works is, that we can buy here now billets for wire and sheet making and bar iron at one and the same price, namely 102.50 marks per 1,000 kilograms ($24.40). On the other hand, the Stahlwerksverband sells the same German billets to England at 80 marks ($19.05) Glasgow. The quantity delivered by the Stahlwerksverband during April has been 371,956 tons, against 486,468 tons in March this year and against 481,974 tons in April, 1907. These figures comprise: Girders, beams, railway material, and heavy angles. The next months will bring a further decrease.

All prices are nominal. The bank rate is still 5½ per cent, but it will become reduced to 5 or even 4½ per cent in the next weeks. It is expected, however, that in the autumn the bank rate will again rise to 6½ or even 7 per cent, on account of the heavy money requirements of the empire. The outlook in every line of trade remains most unsatisfactory and discouraging.

BRITISH IRON MARKET.

Collapse of Corner in Pig Iron Warrants—Little Buying.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., May 23.

This week has been specially interesting in regard to pig iron owing to the collapse of the corner in warrants, which during the past fortnight has so disorganized business. Warrants which a few days ago were quoted 56s 9d ($13.88) have fallen suddenly to 49s 9d ($12.18), while No. 3 has realized 50s ($12.24), compared with 56s ($13.70) a week ago. Yesterday's transactions showed an improvement of a few pence on those of the previous day, and the market may be said to

be in a fairly sound condition, while a more hopeful feature is that forward sales are substantially at the same price as cash transactions. For example, three months' sales yesterday were 49s 6d ($12.12), and cash transactions 49s 9d ($12.18). There has been some increase in Connal's stores, which now stand at 77,079 tons, and represent an increase since the beginning of the month of about 10,000 tons. But the total is a mere trifle, which in the event of a revival would probably melt away almost immediately. Some of the speculators must have been badly hit by recent proceedings. Shipments have fallen off somewhat. The Midland district has been entirely unaffected by the Cleveland squeeze, and here prices tend steadily downwards, the fall on the week being about one shilling per ton. Nobody is buying anything but the smallest quantities, confidence being at the lowest ebb. At the same time, everybody agrees that with stocks as they are, any revival would probably send pig iron prices up with a bound.

METAL MARKET

NEW YORK.

June 2.

Copper.—The market is without much strength because of the failure of consumptive demand to keep pace with the increase in production. Exports during May were about 51,000,000 pounds, or 20,000,000 pounds less than in April. The annual report of the Amalgamated Copper Co. for the year ending with April shows net earnings equivalent to 4.3 per cent on the capital stock, against 9 per cent the year previous and about 6 per cent two years ago. Its 1907 production was 212,000,000 pounds of refined copper. Despite the light demand, however, prices have stiffened slightly in the last few days and we quote: Lake, 12⅞ to 13⅜; electrolytic, 12¾c to 12⅞c; casting, 12⅜ to 12½c.

Pig Tin.—Current sales are at the level of 28½c to 29c, New York, though transactions are so small as to render accurate quotations difficult.

Pig Lead.—The situation is fairly strong, as there is evidence of an increase in demand. We quote, New York, 4.32½c to 4.37½c.

Spelter.—The market is lifeless, with a downward tendency. We quote 4.50c to 4.60c, New York.

Antimony.—The current level is: Cookson's, 8¾c to 9c; Hallett's, 8½c to 8⅝c; ordinary brands, 8¼c to 8⅜c.

ST. LOUIS.

June 1.

Lead and Zinc.—Zinc prices continued to fall in the Joplin district last week, and smelting agents held out little hope of stopping the decrease until it reaches a base price of $30 a ton. The highest price paid during the week was $35 a ton for ore sold early in the week. After the middle of the week, the price was cut to a $34 base, and offerings as low as $32 base were made.

The mines are having a hard struggle against a greatly increased volume of water from two months of heavy rains. But for the fact that lead ore is buoyant, advances having been recorded for eight consecutive weeks of $1 a week, a large number of mines could not continue production with the increased expense of pumping out the water. Lead sold as high last week as $60.50 a ton, but even this increased price will not keep some mines producing if the problem of water is not soon settled.

During the five months of the year just ended, the district has fallen behind the same period of last year $3,785,445 in the value of zinc and lead ore shipped. Panic prices reduced the shipment of ore a total of 39,111 tons—32,589 tons of zinc and 6,352 tons of lead.

CHICAGO.

June 2.

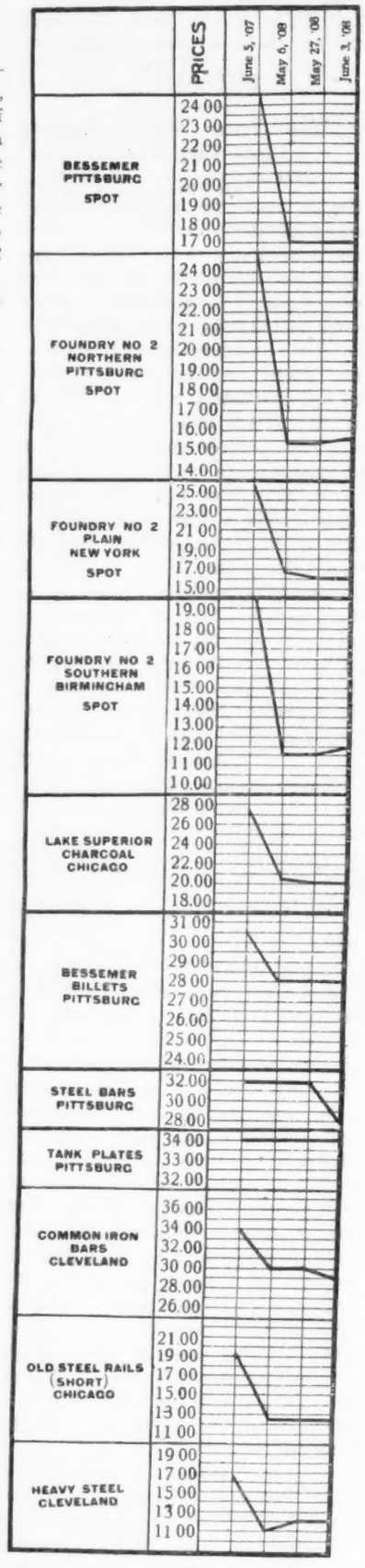
The transactions of the week in the metals were much more numerous than those of the preceding seven days and an appreciably better feeling was noticeable. Copper and tin prices are unchanged, but lead is stronger with a tendency to higher prices. Our minimum prices we quote for carload lots. Smaller quantities bring higher prices.

Lake copper, 13½c to 14c; casting, 13¼c to 13½c; pin tin, 32c to 32½c; spelter, 5.10c to 5.25c; pig lead, desilverized, 4.45c to 4.60c in 50-ton lots; corroding, 4.75c to 4.85c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound casks; Cookson's antimony, 11c to 11½c; other grades, 10c to 10½c.

Little interest is shown in the old metals and prices are unchanged. We quote prices to dealers as follows:

Copper wire, 10½; heavy copper, 10½c; light copper 9½c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 5½c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; tea lead, 3¼c; lead scrap, 3½c; zinc, 3¼c; tin pipe, 25c; tin foil, 22c; pewter, 17c; electrotype plates, free from wood, 4c; electrotype dross, 2¼c; stereotype plates, 4½c; stereotype dross, 3c; prime slab zinc, $62 per ton.

PRICE CHART.



PERMANENT IMPROVEMENT

Confidently Expected by President Hoadley, of the Alabama Consolidated.

Joseph H. Hoadley, president of the Alabama Consolidated Coal & Iron Co., and identified with other large manufacturing concerns, is of the opinion that the current improvement in the situation marks the beginning of an upward movement which will assume large proportions immediately after the usual period of mid-summer quiet and will culminate in a severe pig iron shortage about Jan. 1. To THE IRON TRADE REVIEW he says:

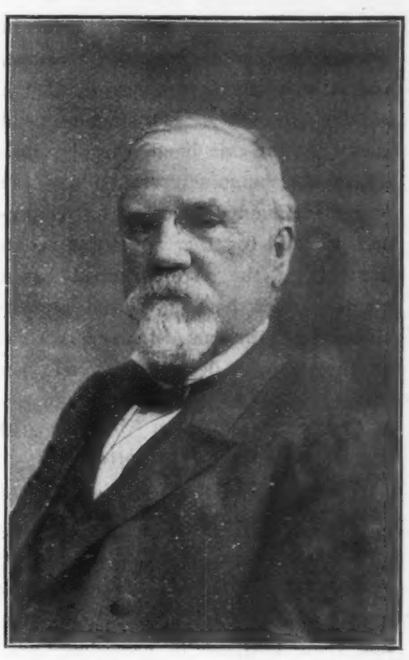
"The turn is certainly at hand and there is every indication that it is permanent. When the crisis came, manufacturing interests all over the country, forced to convert their quick assets into cash, began to cut down their stocks as rapidly as possible and these are just now at a very low level. We are now practically assured of a record crop. The only real addition to the country's total wealth comes from the soil, and this now promises to be enormous. Wheat, corn and fruit prospects were never better and a tremendous yield of cotton is anticipated. When the mines, furnaces, rolling mills and other manufacturing interests of the south shut down a great body of workmen, chiefly negroes, were rendered idle. The only thing they could turn to was cotton and the result is a record acreage under cultivation. Elsewhere conditions are largely similar. This means a heavy demand for tools and harvesting machinery.

"Naturally, because of their perishable nature, crops must be moved promptly, even to the exclusion of all other shipping. And right here is a point which is frequently overlooked. When our blast furnaces are running to capacity, turning out over 2,000,000 tons of iron each month, there is always an item of about 700,000 tons in transit. Just now, however, this item is practically nothing. Stocks in foundry yards are insignificant. A sudden revival of manufacturing activities will mean that iron must be had at once. But first, this 700,000 tons must be made up, and if it so happens that this demand develops at the close of summer—as seems probable—it will meet the crop movement, with railway rolling stock generally in bad repair, and a car famine will result. With the political situation cleared, this shortage will be accentuated by a revival of other activities and acute conditions will speedily develop. I look for a severe pig iron shortage by the first of the year, with high prices the rule, a state of affairs to which the light movement of lake ore will contribute largely.

"For these reasons our company is not interested in orders for forward delivery at anything like the current level. When the present improvement began, we declined, in four days, orders for approximately 50,000 tons at prices which would have netted us $11.25, Birmingham. I know for a fact, from inquiries now being received in railway equipment and other important lines, that there is an immense volume of business about ready to be placed, and hence have every faith in the future."

DINNER TO MR. DISSTON.

Samuel Disston, secretary and general manager of Henry Disston & Sons, Inc., Philadelphia, has retired from active connection with the corporation and will hereafter serve merely as chairman of the board of directors. His giving up of his active duties after a continuous service of 57 years was made the occasion of a dinner at the Bellevue-Stratford May 28, attended by practically the entire office force and the heads of the various departments of the big works at Tacony, where the number of employes has increased, during Mr. Disston's connection, from 35 to 3,500, making this the largest saw manufacturing plant in the world. Robert J. Johnson, second vice president of the company, served as toastmaster and presented Mr. Disston a large silver loving cup. In accepting it the retiring officer spoke feelingly of the founder of the concern, his brother Henry Disston, and of the younger men of the organization on whom its management was falling. Brief remarks were made by a number of other present and former officials and others. Samuel Disston became connected with the works in 1850, served an apprenticeship as saw maker, then entered the office and eventually became traveling representative. Fourteen years ago he was made secretary and general manager.



SAMUEL DISSTON.

THE CONTROVERSY AT SYRACUSE UNIVERSITY.

In regard to the trouble at Syracuse university between Dean Kent and Chancellor Day over the latter's demand for the dean's resignation, the dean has written to the trustees, in part, as follows:

It appears that at a meeting of the executive committee, Chancellor Day recommended Dean Kent's dismissal, and at his request, the committee voted for it.

It does not appear:—1. That all the members of the committee were present. 2. That any charges were made against Dean Kent other than that the chancellor could not address him without "the embarrassment of controversy and contention." 3. That the committee took any steps to find out whether the charges were based on facts, or whether they were but a hallucination on the part of the chancellor. 4. That any attempt was made by the committee to learn other than by the statement of the chancellor, whether or not Dean Kent was a suitable man for the position he had occupied, apparently to the satisfaction of everybody concerned, for five years. 5. That the committee voted against Dean Kent for any other reason than because the chancellor wished them to. 6. That the chancellor has any facts to support his statement that Dean Kent's "usefulness in the university is at an end."

It does appear—1. That the chancellor has refused to give Dean Kent any detailed specifications in support of the general charge made against him, and has refused his request for the appointment of a committee of trustees to investigate all matters relating to his administration of his position for the past five years. 2. That the chancellor has made statements to the students and to alumni intended to lead them to believe that he knew of things against Dean Kent, which, if they knew, they would side with the chancellor. 3. That the chancellor published a letter in which, referring to the resolutions passed by alumni in Pittsburg, he said: "I have only to remark that any graduate who, in the absence of the facts, feels capable of reversing a unanimous decision of the committee, of which ex-Chief Justice Andrews was the principal member, shows that we failed in certain essential particulars in his education. Logic was neglected." 4. That he wrote a letter to an alumnus in Brooklyn in which he said: "I could tell you things which would stop your pen forever."

On May 5, Dean Kent wrote to the chancellor calling him to account for these words, but has received no reply.

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THE AMALGAMATED WAGE SETTLEMENTS.

In years gone by, the chief topic of interest at this period of the year was usually the impending wage scale settlements with the Amalgamated Association. Controlling as it did the bulk of the production of finished iron and steel, the attitude of the association and its strength for a contest, were discussed with the keenest interest. Times have changed since then. It is hard to realize that the association once controlled the Homestead steel works, for instance. At present the association is an iron, sheet and tin mill proposition.

The convention at Youngstown which closed recently was a temperate one, as was to be expected from the policy the association has followed in the past few years, and the conditions in the iron and steel industry, which do not make for any contest inaugurated by the labor side. The association could not well formulate any demands for wage advances, and of course it could not be expected to suggest any reductions, so that naturally it had little to do.

In the sheet and tin plate branches, there is no likelihood of any controversy arising. The scales will probably be signed for the year beginning July 1, on the present basis. The United States Steel Corporation, which generally dominates in these matters, has adopted a definite policy of maintaining wages, and if there are demands for minor changes in working conditions, the men are likely to consider them in a broad way.

With the iron scale an entirely different situation is presented. There are problems which did not occur in the old days, when iron was supreme, and it was merely a question of the relative strength of manufacturers and men. On the one hand, was the ability of the manufacturers to pay the wages demanded and their willingness to hold together and force a settlement on the predetermined basis; on the other hand, was the reasonableness of the men's demands, whether they would desert the trade because the wages were too low, or desert the organization because the wages offered were too attractive.

The conditions drawing the lines of a possible controversy at present are entirely different. The iron mill operators are subject to conditions made by the steel industry, and must manage their business in accordance with those conditions, or see it hampered to the detriment alike of themselves and their employes.

There is, in the first place, the competition of the basic open-hearth steel furnace for the bulk of the raw material of the iron industry. The time was when the crop of old material went to the iron foundries and the iron mills alone, and chiefly to the latter. Prices were determined chiefly by what the iron mills were willing to pay. Today it is altogether different. The basic open-hearth steel industry has grown from nothing to enormous proportions. The production of basic open-hearth steel prior to 1897 was a matter of less than seven figures; the production in 1907 was a matter of eight figures. In other words, the production was: 1896, 776,256 gross tons; 1897, 1,056,043 tons; 1907, 10,279,315 tons.

A few years ago, it was considered necessary for the basic open-hearth steel process to use at least 50 per cent scrap, and it was wondered where the scrap would come from as the demand continued to grow. At first, of course, the new scrap made in the Bessemer plants helped a great deal. Even as late as 1902, the production of basic open-hearth steel was only 4,500,000 tons, against a Bessemer production of 9,125,000 tons. At present, however, the two processes are about on a parity, and the Bessemer scrap is a relatively less important contribution. The deficiency has been made up by the use of direct metal and various special processes as, for instance, the duplex process at Ensley, described in these columns on May 21. These methods remove the necessity for scrap, but they do not remove its desirability, at a price. They are, moreover, methods which are quite out of the question for the small open-hearth plants. The call for scrap remains, and nearly all the scrap which goes through the iron mills can find a market, at a price, with the open-hearth steel works. It is a question of converting old material into new by the most feasible and economical methods, and in the competition the puddlers and finishers are partners with their employers to make conditions such that the material will be invited to go through the iron mill.

The changed conditions in the steel trade have put another burden on the iron mills. In 1880 general scales were adopted on a "2½-cent card" whereby the base rates were paid when iron bars were at 2½ cents or less, with advances as the price advanced above 2½ cents. The sliding feature made little difficulty in those days, as prices had a general declining tendency, and were usually below the base of the scale. Until very recent years, it has been rare that advances have been paid, over the base rates, on account of the sliding feature of the scale. In 1895, the base

of the boiling scale was pushed down from 1.5 to 1.1 cents; in 1896 it was advanced to 1.3 cents, but in 1897 it was pushed down to 1 cent. Since then, that limit has been the desideratum of the men, and by the reference to conciliation last summer they succeeded in having the point restored. The result is that while the base of the present scale is $5, it is on a 1-cent price for bar iron, and advances 12½ cents for every twentieth cent that bar iron sells above this basis. Through conditions in the steel business, a much higher general range of values is established, so that the iron mill must pay more for its scrap and other supplies and does not get the same advantage from the higher selling price of bar iron that it received in years past when the 1-cent minimum was established. Everything has been changed in the industry except this 1-cent basis, which makes it that in a period of depression, with much less work coming to the iron mills than they could handle, the scale requires them to pay, at the present time, $1.12½ above the base of the boiling scale.

A POINT ON EXPORT TRADE.

The necessity for more aggressive efforts on the part of the American manufacturer if he is to secure a fair share in the vast volume of trade now developing in the far east was emphasized by a speaker at the recent convention of supply and machinery interests at Richmond in these words: "It is trade-grabbing rather than land-grabbing that the European nations are now engaged in in the Orient." "Through the peaceful arts of mutually beneficial commerce," he added, "these nations are accomplishing a 'more enduring conquest.'" Handicapped as American manufacturers are by the lack of shipping facilities under their own flag as well as in other important particulars, it has become clear that nothing short of the most energetic measures will secure and hold for them a place of proper importance in the commerce of many developing countries in the Orient. Even on the South American continent, in fact, competition is growing increasingly keen and our markets in certain lines are being threatened.

From the testimony of one who has but recently returned from several years spent in selling American machinery in the far east, it appears that a foremost difficulty with which the foreign agent has to contend is the delusion in the mind of the American producer that anything is good enough for the export trade, provided only it is finished in attractive, or preferably gaudy, style. That this is an idea the maintenance of which is suicidal to trade expansion is agreed by those manufacturers who have made personal visits to their foreign markets and studied the needs there to be supplied. But with many who have not had or created this opportunity the idea still holds and is proving an important stumbling block in the upbuilding of our trade abroad.

A current series of articles in one of the popular magazines is surprising the average reader with the progressive plane upon which industrial affairs are conducted in various South American republics. To many American manufacturers, however, this is not a matter of surprise. They discovered these conditions long ago and are now profiting as a result. They have learned that our neighbors on the south want a dependable product, that they have the money to purchase it and that, if they find it dependable, further orders will follow. Several manufacturers emphasized this point at the Richmond gathering. "In the case of my own company," said one, "we make it a rule to send abroad only the best we can turn out. Indeed, I ought to make it stronger than that. We send a little better than the best. If we have developed an article with improvements over that known to the purchaser and ordered by him, we send that instead."

It is testimony of this kind that gives promise of the further development of our export trade. As was said by the speaker first quoted: "Trade is essentially non-altruistic," but it is "equally well established that to be permanent reciprocal trade must be mutually beneficial." There is nothing of mutual benefit in the furnishing of an inferior article simply because the foreign purchaser doesn't know a better. And, to step down to a lower plane, the chances are that he does already know better or will learn better before he is ready to place further orders, and American manufacturers as a class will suffer.

RE-EMPLOYMENT DAY

Is Given a Boost by a St. Louis Hardware Company.

St. Louis, June 1.—Re-employment Day in St. Louis, June 1, as designated by the local branch of the National Prosperity Association, began with the re-employment of 17,500 workmen in St. Louis, and the mailing of orders aggregating $1,000,000 from one St. Louis firm, the Simmons Hardware Co. to the manufacturers of the country. With each order the Simmons company mailed a copy of the following note:

"The inclosed order is one of a number aggregating over $1,000,000 which we are sending out to reach manufacturers on June 1. This is the date that has been suggested by the National Prosperity Association as Re-employment Day, and these orders are a contribution from us to give manufacturers a basis for the re-employment of as many workmen as possible."

Among the St. Louis concerns, which report an increase in business, are the following: Bridge & Beach Mfg. Co., Commonwealth Steel Co., Majestic Mfg. Co., American Brake Co., Tait-Nordmeyer Engineering Co., C. L. Gray Construction Co., Blackmer & Post Pipe Co., Charter Oak Stove & Range Co., National Lead Co., Moran Bolt & Nut Co., American Car & Foundry Co., Desloge Lead Co., Wagner Electric Mfg. Co., Medart Patent Pulley Co., Western Type Foundry, Ringen Stove Co., Donk Bros. Coal & Coke Co.

All of these concerns express hearty sympathy with the re-employment movement as championed by the National Prosperity Association.

The first payment of 25 per cent from the holders of preferred and common stock of the Westinghouse Electric Mfg. Co., who have subscribed to the $6,000,000 issue of new stock, fell due May 25. Many of the shareholders anticipated their payments. An additional 20 per cent will be due Aug. 1; 20 per cent Nov. 1; 20 per cent Jan. 1, 1909, and 15 per cent April 1, 1909.

OUR FOREIGN COMMERCE.

April Shows Some Export Gains—Tin Plate Movement to Canada—British Exports Decrease.

There was quite an increase in April exports of a number of steel products as compared with March, rails in particular increasing from 10,107 tons in March to 20,999 tons in April. Pig iron showed an increase of about 2,500 tons, scrap increased a thousand tons and wire a little over a thousand.

Tin plates had a special movement in April, there being heavy exports to Canada to escape the "anti-dumping duty" which became effective May 1 through a special government order placing tin plates in the anti-dumping list. The tin plate exports in April were 5,095 tons, against 2,639 tons in March and against 1,882 tons in April, 1907. The tin plate export movement to Canada has been killed by the imposition of this duty.

Exports of crude steel, including ingots, blooms, billets, sheet bars, etc., have varied so that it is well to compare them separately, and then compare the toal of all other products exported. The exports of these crude steel lines have been as follows:

Monthly average.	
1902	201
1903	458
1904	26,194
1905	19,803
1906	16,051
1907	6,666
January, 1908	5,317
February	21,744
March	23,444
April	3,822

The increase this year is due wholly, or almost wholly, to the large orders for sheet bars placed late last year by sheet mills in the Midlands. The orders are understood to have totaled about 100,000 tons, for equal deliveries over the first six months of this year. The exports were a little slow getting started, but were of full volume in February and March. It is stated that the decrease in April is only temporary, heavier shipments having been made in May. The figures above given include all crude steel exports. The March total includes 3,428 tons exported to the United Kingdom, 391 tons to British North America, and three tons to "other countries."

The exports of all iron and steel, outside of crude steel, and including scrap, pig iron, finished steel, etc., have been as follows:

Monthly average, 1907	101,878
January, 1908	69,035
February	60,011
March	72,993
April	89,700

More than half the gain from March to April, as already noted, was scored in the one item of rails, which increased 10,000 tons. As is well understood, the decline in demand which occurred in the United States late last year was not exceptional, there having been a decrease in demand for iron and steel all over the world, and in view of the conditions the showing made by recent figures is quite satisfactory to export interests.

Imports Decreased.

The imports of all iron and steel lines of which the weight is returned decreased from a monthly average of 55,197 tons in 1907 to a monthly average of 20,932 tons in the first quarter of this year, and to 12,343 tons in April. Pig iron constituted the bulk of the imports in 1907, averaging 40,788 monthly, and decreasing to 9,710 tons a month in the first quarter of this year and to 3,003 tons in April.

The imports of all iron and steel, except pig iron, averaged 14,409 tons a month in 1907, decreasing to 11,272 tons monthly in the first quarter of this year, and then to 9,340 tons in April. This concurrent decrease in exports and imports reflects the change which has occurred in the general character of the American iron and steel industry in recent years. Formerly the iron and steel movement was determined, as to direction, by the extent of the demand. When demand was heavy at home, there were imports; when it became light, there were exports. A change in the extent of demand would increase exports at the expense of imports, and vice versa. The conditions have changed, and the American iron trade now moves more as the British trade, for instance, generally moves, activity increasing both imports and exports, and declining activity diminishing both. The trade has gotten to a point where it imports certain grades of material which it needs, and exports other grades which it does not need so badly. Then, too, on account of the great extent of the country, material may be exported at one point and imported at another.

These cross currents are well illustrated in certain lines. Thus, in the 10 months ending with April we imported 17,077 tons of scrap, while we exported about the same quantity, 16,040 tons. We imported 189,776 tons of pig iron, and exported 43,991 tons. We imported 11,831 tons of wire rods, probably of special steel, and exported 5,671 tons, probably of ordinary soft steel.

British Exports Declining.

The statistics of the United Kingdom show a decline in exports similar to that experienced by the United States, but they do not show a similar decline in imports, and this is not the normal showing for the British trade.

The total of all iron and steel exports from the United Kingdom averaged 430,531 tons a month in 1907, and 379,722 tons a month in the first quarter of this year, while it was 339,063 tons in the single month of April. The total iron and steel exports of the United States and the United Kingdom compare as follows:

Exports, Gross Tons.

	—April—		Ten months ending April.	
	1907.	1908.	1907.	1908.
Scrap	3,786	2,929	14,392	16,040
Pig iron	8,211	5,153	71,701	43,991
Billets, sheet bars, etc.	8,867	3,822	102,811	83,482
Wire rods	626	713	9,021	5,671
Rails	40,293	20,999	261,238	252,315
Structural iron and steel	13,724	13,741	103,799	120,788
Bar iron	1,161	302	38,765	11,810
Steel bars	8,485	3,494	36,451	57,288
Sheets and plates:				
Iron	4,234	3,050	24,233	35,692
Steel	9,825	4,347	81,724	51,463
Tin plates	1,882	5,095	6,131	12,766
Hoops, bands, etc.	78	331	5,272	8,115
Wire	14,846	13,610	138,666	134,467
Nails and spikes:				
Wire	4,195	2,253	33,277	32,643
Cut	1,202	1,039	6,554	5,366
Tacks, etc.	566	313	5,651	5,036
Pipe and fittings	10,811	12,331	105,038	150,755
Totals	132,792	93,522	1,044,724	1,027,688

Imports, Gross Tons.

	—April—		Ten months ending April.	
	1907.	1908.	1907.	1908.
Scrap	1,408	111	14,654	17,077
Pig iron	61,304	3,003	453,685	189,776
Billets, bars and steel, n. o. s.	926	797	16,156	14,582
Wire rods	1,395	706	14,530	11,831
Rails	400	417	3,924	2,626
Structural	338	53	8,925	1,418
Bar iron	1,189	830	31,244	31,345
Sheets and plates	247	245	3,024	2,230
Tin plates	6,468	6,155	51,875	48,538
Hoops, bands, etc.	10	26	4,068	463
Totals	73,685	12,343	602,085	319,886

Total Iron and Steel Exports, Gross Tons.

	United States.	United Kingdom.
1905	1,010,255	3,721,382
1906	1,325,740	4,682,200
1907	1,302,525	5,166,366
1908 (4 mos.)	346,066	1,396,912

The British exports have thus been running along at nearly four times our own, in point of tonnage. They comprise a widely varied assortment. It is true that nearly a third of the total is pig iron, but less than 4 per cent of the total is crude steel, while the exports of such finely finished products as sheets, tin plates, black plates, etc., are very large. In April the United Kingdom exported nearly twice as large a tonnage of galvanized sheets as the United States did of rails, and more than half again as large a tonnage of tin plates as the United States did of structural iron and steel and pipe and fittings combined, although these are among our heaviest export lines. The comparison becomes more striking when it is remembered that hitherto the United States has been making two and a half times as much iron and steel as the United Kingdom, and even in this slack period is making half again as much.

Pittsburg Foundrymen.—An interesting session of the Pittsburg Foundrymen's Association was held at the Hotel Henry, Pittsburg, June 1. One of the features of the evening was the presence of five ex-presidents of the association, each of whom made appropriate remarks upon the growth of the organization. With the addition of four new names, the membership was brought to the present total of 106, a gain of 23 since the beginning of the year. Some time was given to the discussion of the coming Toronto convention of the American Foundrymen's Association and the plans were outlined for the trip of the Pittsburg delegation, which will be by private car from that city, starting June 8. The subject of the evening was "By-Product Coke," which was discussed by Charles E. Pope, of the Coal & Coke By-Products Co.

The H. C. Frick Coke Co. is asking bids for the construction of over 100 new dwellings at its Filbert plant to be located one and one-half miles below Buffington, Pa., along the Monongahela river. The buildings include 107 houses 23 x 32 feet, five 28 x 32 with kitchen, four six room single houses and two superintendents' houses.

ENDORSE TRADE SCHOOL.

St. Louis Metal Trades Branch Takes Steps to Forward Movement.

The St. Louis branch of the National Metal Trades Association, at a banquet May 22, adopted a resolution instructing a committee of branch members to confer with the Washington University authorities in an effort to install there a scheme of co-operative education, such as is proving so successful in Cincinnati. A resolution was adopted by the branch approving the plan of organization and the course of instruction of the Rankin trade school, St. Louis, and pledging support to it. The announcement had just been made that the contract for a building to cost $100,000 for the Rankin School of Mechanical Trades had been let, it having been made possible through the liberality of David R. Rankin Jr.

The principal topic discussed at the banquet, which was attended by seventy-five St. Louis manufacturers, was "Co-operative Industrial Education." A discussion of the Schneider plan was read by its originator, Professor Herman Schneider, of Cincinnati, and the course of study to be pursued at the Rankin trade school was discussed by Lewis Gustafson, its superintendent. In prefacing his speech, giving an account of the trial of the co-operation plan at Cincinnati, the professor made the broad declaration that the efficiency of the American workman has decreased in the last 10 years, while that of the German workman has notably increased, and therein, he said, lies the reason for Germany's wresting from the United States in export trade in machinery. F. K. Copeland, of Chicago, president of the National Metal Trades Association, spoke on the work of the National Association. Professor Calvin M. Woodward spoke strongly in favor of the industrial trade training movement embodied in the Rankin institution. J. W. Van Cleave, president of the National Manufacturers' Association, made a strong appeal for industrial education for boys between the ages of 9 and 13 years, who leave school to the number of 20,000 annually to go to work in the great industrial centers. We must be ready for the changing industrial conditions, he declared.

May Adopt Cincinnati Plan.

Boston, May 30.—The Massachusetts Institute of Technology, which earlier in the year had under consideration the adoption of the Cincinnati university plan of co-operative education, whereby students are permitted to obtain practical experience in the workshops of industrial plants while pursuing a technical course of instruction, has postponed action on the project until the business conditions are more favorable.

President Arthur A. Noyes stated to the REVIEW correspondent, however, that the idea has not been abandoned. "It seemed best at this time," he said, "not to do anything which might in any degree displace regular workmen in industrial plants, but in the event of a return to activity in the near future the plan may be tried here. We shall probably take the matter up for further consideration whenever it appears practicable to do so without detriment to the interests of the wage earners."

A GREATER REACTION

To Follow Present Depression, Declares Charles M. Schwab at Detroit.

The International Master Boiler Makers' Association closed its convention in Detroit, May 29, with a banquet, at which Charles M. Schwab, chairman of the Bethlehem Steel Corporation, was the principal speaker. Among other things, Mr. Schwab said:

"The depression in the steel trade was the greatest in the history of living man, but as great as was the disturbance, the reaction will be even greater. This country is bound to go ahead, and we—that is, you and I—must do our share. I want to be plain with you; I believe that the manufacturer in this country will always demand not what is cheapest, but what is best, and your efforts should be to see how well you can do your work. The best will always demand the attention of the community. The broad general scope of the industries today is retrenchment, and the manufacturers are all economizing, but I do not believe the time will ever come when in this country economy will take the place of a demand for quality. Your continual aim should be for a greater efficiency than those you work with."

Other speakers included J. F. Duntley, president of the Chicago Pneumatic Tool Co.; J. W. Duntley, his father; W. O. Duntley and George N. Riley. The following officers of the association were elected: President, P. J. Conrath; vice presidents, A. E. Brown, J. J. Fletcher, A. N. Lucas, W. M. Wilson and George W. Bennett; secretary, H. D. Vought; and treasurer, Frank Gray.

June dividend and interest disbursements of this country will exceed $70,000,000.

PERSONALS.

W. H. Silverthorn, president of the Railway Steel Spring Co., has sailed for Europe.

Ira A. Thomas has become connected with the sales department of the Niles Iron & Steel Co., Niles, O.

O. C. Curtis has resigned as secretary and treasurer of the Mashek Chemical & Iron Co., and on the first of the month will become vice president and secretary of the Desmond Chemical Co., Carter, Mich.

C. R. Spare has accepted the vice presidency of the American Manganese Bronze Co., 99 John street, New York City, and is located at Holmesburg, Pa., as general manager of the company's works now in the course of erection.

John P. Nicholas, manager of sales in the Chicago office of the Lackawanna Steel Co., has been appointed assistant general manager of sales at New York and left for that city to take up his work last week.

Henrick Dreyer, of Berlin, Germany, representing several American machine tool manufacturers in that country, is spending a few weeks in the United States and was an attendant at the Atlantic City convention of the National Machine Tool Builders' Association.

Geo. E. Lees, secretary and treasurer of the firm of Lees & Williams, House building, Pittsburg, distributors of Shelby seamless steel tubing in the Pittsburg district, has resigned and disposed of his interests in the firm. Mr. Lees will leave June 3 for a three months' trip abroad.

Professor Arthur Lucian Walker has been appointed professor of metallurgy and administrative head of the department of metallurgy at Columbia University. His duties will begin July 1, and he will take personal direction of the instruction of non-ferrous and electro-metallurgy and metallurgical design. Professor Howe will continue to deliver his lectures on iron and steel as heretofore.

OBITUARIES.

Robert F. Mann, assistant superintendent of Schumacher & Boye, Cincinnati, machine tool manufacturers, died May 26. Mr. Mann was a native of Bathurst, N. B., and had been connected with Schumacher & Boye for 28 years. He was well known among the machinists throughout the country.

Fred A. Johnson, president of the Gisholt Machine Co., Madison, Wis., died in Denver, Colo., May 26. Mr. Johnson had been connected with the Gisholt company since its incorporation in 1887 and became its president in 1901. He took an active part in the management of the business and spent several years in Europe in the interests of the company. Since 1904, however, owing to ill health, he had been unable to attend to business.

William D. Davidson, a prominent plow manufacturer of Evansville, Ind., died May 22, unexpectedly, of neuralgia of the heart. A few days previous he had returned from an extended trip through the south, and when reaching home declared he was feeling unusually well. Mr. Davidson was born in Dunning, Perthshire, Scotland, Dec. 19, 1851. With other members of his family, he came to this country in 1856 and entered his apprenticeship in a little shop in Princeton, Ind. His trade learned, he then entered the employ of the Blount Plow Works at Evansville. He remained with that firm for 30 years and retired from active duty just three weeks before. He served the Blount company in every capacity from helper to finally manager of the plant. The death of Mr. Davidson came at the very threshold of the fulfillment of his plans to erect a new plow works at Evansville. He leaves a widow and six children.

PLAN FOR SOUTHERN STEEL CO.'S REORGANIZATION.

A plan for reorganization of the Southern Steel Co., dated May 15, 1908, has been submitted to the stockholders and creditors of the company. A new company is proposed under the plan. It is intended to vest in the new company all of the properties real, personal and mixed now owned by the Southern Steel Co. and subsidiary companies, or the capital stock of such subsidiary companies. The new company proposes to issue $10,000,000 first and refunding mortgage 20-year gold bonds, $7,000,000 par value noncumulative, 6 per cent preferred stock, and $10,000,000 common stock.

Assenting general creditors shall be entitled to receive new bonds to the amount of 50 per cent of the principal amount of their claims as finally determined in the bankruptcy proceedings; and preferred stock to the par value of 75 per cent of the amount of their claims, a creditor having a claim to the amount of $1,000 being entitled to receive new bonds at par value of $500 and new preferred stock to par value of $750. All securities, claims, etc., must be deposited with the respective depositories named in the plan of reorganization by or before June 15, 1908. The reorganization committee is James T. Woodward, chairman; Otto T. Bannard, Robert B. Van Cortlandt, Walter T. Rosen, Franklin Q. Brown, W. P. G. Harding, and Cornelius Vanderbilt.

The committee has so far heard favorably from a number of creditors, notably in the south.

LITTLE CHANGE

In Blast Furnace Production Indicated by Incomplete Returns.

Our blast furnace returns for May, are not yet complete. The 280 stacks from which we have heard, out of a possible total of 398, show that the total production of merchant and nonmerchant iron for these stacks was 948,419 tons, compared with a total of 929,885 tons for the same stacks in the month of April. Of those reporting, the same number of stacks were in blast in April and May, namely, 116. The average daily production for May, of stacks reporting, was 30,594, compared with the daily production of the same stacks in April of 30,996, there being one more day for possible production in May than in April, thus bringing down the apparent daily producton. The May production of steel making iron fell off 5,410 tons, while the May production of merchant iron increased 8,008 tons.

Alabama's production for 32 stacks out of 45 reporting for May is 49,457, compared with 45,667 for the same stacks in April. Illinois total production for 24 stacks reporting out of 37 is 146,506 tons, compared with 139,393 for the same stacks in April. One hundred stacks reporting from Pennsylvania give a total of 446,633 tons, compared with the same number of stacks reporting in April a production of 416,394. In Ohio 51 stacks reporting out of a possible 62 show a production of 211,410 tons, compared with the same number of stacks reporting a production of 174,231 tons in April. In New Jersey seven stacks out of nine show a total production of 17,653 tons, compared with a production of 18,577 tons for the same stacks in April. Fifteen stacks out of 24 reporting from New York show a total production of 64,678 tons, for May, compared with 51,932 tons for the same stacks in April.

The Buffalo & Susquehanna Iron Co. has arranged for reducing its funded debt by the redemption of $100,000 of its first mortgage five per cent bonds, the necessary funds being taken from the surplus earnings. The company redeemed a like amount of the same issue at this time last year.

THOMAS J. DRUMMOND*

Thomas J. Drummond, of Drummond, McCall & Co., Montreal, pioneers in the iron making industry in Canada, was born in County Leitrim, Ireland, Sept. 26, 1860, and came with his family to Canada in the early 60's.

Educated in private schools, Mr. Drummond, together with his brother, George E. Drummond, and James T. McCall, established, in 1881, the mercantile firm of Drummond, McCall & Co.; and in 1887, on the adoption of the iron tariff, the firm turned its attention to manufacturing and established the Montreal Car Wheel Co. at Lachine, Quebec.

The next step was the elimination of foreign charcoal pig iron in the manufacture of their wheels, and to this end was erected at Radnor Forges, Quebec, an up-to-date plant for the manufacture of charcoal pig from Canadian raw materials, a move which resulted in the establishment of foundry and furnace plants in the provinces of Ontario, Quebec and Nova Scotia.

Aside from their general policy of controlling trade east and west, one of the chief aims of Mr. Drummond and his associates, in connection with the establishment and development of their various industries, has been to secure control of the mines feeding the different plants, and to this end they have been located at strategic points throughout the above mentioned provinces; always, however, with a view to economy as regards rail and vessel freights.

Chief among these industries is the Canadian Iron & Foundry Co., Ltd., of which Mr. Drummond is vice president, and one of the leading spirits, with works at Fort William, St. Thomas and Hamilton, in the province of Ontario; Montreal and Three Rivers, in the province of Quebec; and Londonderry, in the province of Nova Scotia. This company is the largest producer of railway car wheels and cast iron pipe in the Dominion, and also has a large output of high grade machinery and other castings.

At Midland, in the province of Ontario, and at Radnor Forges, in the province of Quebec, are located the works of the Canada Iron Furnace Co., Ltd., of which Mr. Drummond is a director. In the province of Quebec alone this company controls over 100,000 acres of ore bearing lands, and in Ontario, at Bessemer, has recently completed a long term lease of one of the largest Bessemer ore mines in the Dominion, which is in close proximity to the Midland plant. At the latter point, the company owns and controls a large section of the best portion of the harbor front, which is the chief shipping point for wheat coming over the Grand Trunk. Present indications are that it is also likely to become the lower lake port for other leading Canadian railways. The principal products are Bessemer, malleable Bessemer, and foundry pig iron.

In the province of Nova Scotia, at Londonderry, are the works of the Londonderry Iron & Mining Co., Ltd., which owns and controls one of the most important iron ore deposits in eastern Canada as well as valuable spruce and hardwood timber lands, not far from which are located the rich iron ore deposits of the Annapolis Iron Co., Ltd., said to contain upwards of 300,000,000 tons of high grade ore.

Besides being the president of the two last mentioned companies, Mr.

THOMAS J. DRUMMOND,
DIRECTOR AMERICAN IRON AND STEEL INSTITUTE.

*Sixth of a series of brief biographical sketches of officers and directors of the American Iron and Steel Institute. The first of the series was Elbert H. Gary, April 16; the second, Willis L. King, April 23; the third, John A. Topping, May 7; the fourth, Wm. A. Rogers, May 14; and the fifth, E. A. S. Clarke, May 21.

Drummond is also a director of the Drummond Mines, Ltd., which not only controls valuable silver mines in the Cobalt district but is the owner of the newly discovered hematite iron mines at Bathurst, New Brunswick, where, by diamond drilling, over 24,000,000 tons of high grade ore have already been proven. This deposit, like the Annapolis, is situated within 20 miles of an Atlantic port.

Mr. Drummond is also vice president of the Lake Superior Corporation, and was one of the most active spirits in the successful reorganization of that concern. The company's works at Sault Ste. Marie, Ontario, are the largest producers of steel rails in Canada, in addition to which, the Corporation, through its subsidiary companies, owns and controls the electric power both on the Canadian and American sides, a factor in the economical operation of its various industries; the Algoma Central railway; the Algoma Central steamship line; the Helen mine, at Michipicoten; large timber lands and saw mills, as well as numerous other properties and mills. This is without doubt one of the greatest and most promising enterprises of the dominion.

Mr. Drummond is also president of the Montreal board of trade, a position which is regarded in Canada as the "Blue Ribbon" of the business world; a director of the General Accident Assurance Co. of Canada; an associate member of the institute of civil engineers; a member of the American Institute of Mining Engineers, and a member of the Canadian Mining Institute, and a director of the American Iron and Steel Institute.

Present indications are that Mr. Drummond is destined to play no small part in the future commercial and industrial progress of the dominion.

Seek Sale of Foundry.—Rogers, Brown & Co., Cincinnati, and the Scully Steel & Iron Co., Chicago, creditors of the Marion Mfg. Co., Marion, O., have filed a motion in bankruptcy court for an order of sale of the Marion company's assets, and a hearing will be given the motion June 11. Trustee W. G. Harding says that the debts of the bankrupt company have been reduced approximately from $250,000 to about $100,000, and he holds that if no sale is ordered, prospects are good for paying every dollar of indebtedness. The petitioning creditors, however, declare that they are anxious to close the affair.

CASTINGS CONTRACTS

Attract More Interest in Cincinnati Market—News Notes.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., June 1.

But little change is noticeable in the machine tool industry. Orders continue irregular, but with no material change in the volume. One manufacturer of lathes reports an order for eight lathes, which is quite encouraging, being the largest single order since the depression became serious. The strengthening of the pig iron market has brought out some interest in castings contracts and one large contract involving about $25,000 worth of castings has been placed at the flat price, based on the present price of pig iron instead of the sliding scale. It is possible that machine tool makers may anticipate their wants to some extent in order to take advantage of present prices of pig iron under the possibility of an advance in prices which would result in a corresponding advance in the cost of castings under sliding scale contracts.

It is reported in iron circles that another new industry will likely be added to the list in Cincinnati in the form of a new steel bar mill. Negotiations are on for this enterprise, but for the present full details of the proposition are withheld.

The Cincinnati Metal Trades Association will hold its quarterly meeting on June 11. The association has definitely decided to give the employes in the shops another outing this year, the latter part of July or the first of August. It has also been decided that tickets for the outing will be given to the employes in the shops who have been laid off during the lull in business. The outing will be in charge of the following committee: E. H. Hargrave of the Cincinnati Tool Co., P. O. Geier of the Cincinnati Milling Machine Co., R. B. McGowan of the McGowan Pump Co., E. Von Wyck of the Von Wyck Machine Tool Co., and S. C. Schauer of the Cincinnati Machine Tool Co.

The I. & E. Greenwald Co. has given a mortgage to the Provident Savings Bank & Trust Co. to secure a bond issue of $100,000. The bonds are payable 10 years after date, with interest at 6 per cent, payable semi-annually. The mortgage covers all the machinery and the property, 100 x 254 feet, on the northwest corner of Pearl and Eggleston avenue.

Rogers, Brown & Co. have bought at public auction a block of $200,000 of bonds of the Union Iron & Steel Co., of Delaware. The Union Iron & Steel Co. is the company of which E. L. Harper was vice president and general manager, and which failed some months ago. It has furnaces at Ironton, O.; Big Stone Gap, Va.; and Chatham, N. Y. The bonds purchased by Rogers, Brown & Co. represent the entire issue and are secured by a mortgage on the furnace at Ironton, O. The trustee under the mortgage has brought suit for foreclosure of the mortgage and the courts issued a decree to put the property up for sale some time early in July.

ANNUAL REPORT OF SHELBY IRON CO.

The annual report of the Shelby Iron Co. for the 12 months ending March 31, 1908, shows a gain in gross profits of $5,459, but a decrease in net profits of $13,164, due to the increase in operating expenses, and also to the amount set aside for depreciation. The income account shows gross profits of $66,261, an increase of $5,459; expenditures, depreciation, etc., $22,159, increase of $18,623; net profits, $44,102, decrease of $13,164; previous surplus, $251,404, increase of $7,266; total surplus, $295,506, a decrease of $5,898; dividends, $50,000, unchanged; profit and loss surplus, $245,506, decrease of $5,898.

In concluding his report, President T. G. Bush says: "There has practically been no market for iron since about Nov. 1, 1907. I am pleased to report, however, that the outlook is very encouraging. Indications now are that iron of all kinds has about reached the bottom price, and with prospects of good crops and the question soon to be settled as to who shall be the next president, we can look for the full restoration of confidence and an active and satisfactory business as before."

Cincinnati Foremen's Election.—The Cincinnati Foundry Foremen's Association elected the following officers at the annual meeting, held Saturday, May 23: President, John A. Logan, National Cash Register Co., Dayton, O.; vice president, George W. Piehl, the Blymeier Iron & Machine Works, Cincinnati; treasurer, John C. Burns, the Samuel Tatum Co., Cincinnati; and F. W. Weissman, Foundry Specialty Co., was re-elected secretary. The incoming president, who was speaker of the evening, gave an excellent talk on daily observations in the foundry. From 10 to 15 foundry foremen will attend the Toronto convention, and will be joined by 25 or 30 foundrymen and foremen from surrounding cities, making a good representation.

BUILDING PLANT.

The Tropenas Steel Co., New Castle, Del., Will Operate by Fall.

Good progress is being made in the construction of the new plant of the Tropenas Steel Co. at New Castle, Del., where the company has secured 90 acres of land well adapted to its purposes. Work has been under way for some time, and it is hoped to have everything in readiness for operation this fall. The company, which is capitalized at $750,000, will make miscellaneous steel castings and some specialties, using the Tropenas patents. The officers are: President, Alexander Tropenas, of France; vice president, Arthur Simonson, of Philadelphia; secretary, D. J. Reinhardt, of Wilmington, Del.

The active management of the company will be under the control of Mr. Simonson, who was formerly connected with William Wharton Jr. & Co., Inc., of Philadelphia, makers of railroad supplies, and who, though quite a young man, has gained a high reputation as a skillful foundryman. He is an able writer on foundry subjects and a leading member of the Foundrymen's Association of Philadelphia.

Kerr Turbine Sales.—The Kerr Turbine Co., Wellsville, N. Y., is busy in spite of dull times executing orders, as follows: Two 60-horsepower Kerr steam turbines coupled to No. 8 Sturtevant gas blowers, for the Economical Gas Apparatus Construction Co., Aberdeen, Scotland; 10 single stage Kerr steam turbines with disk fans for forced draft work for the Lathrop Engineering Co., New York; one 10-kilowatt turbine generator set, direct current, with brake testing outfit for the Agricultural & Mechanical College of Mississippi; one 4-horsepower single stage turbine for driving blower for the Buffalo Forge Co. for service in Mexico; one 15-kilowatt direct-current Kerr-Sterling generator set for C. Deuterman Sons, White Plains, N. Y.; one 150-kilowatt Kerr-Westinghouse direct-current unit for Janeway & Carpender, New Brunswick, N. J.; one 100-kilowatt alternating current Kerr-Burke turbine alternator for the Warren Mfg. Co., Milford, N. J.; one 85-horsepower Kerr steam turbine for the Sirocco Engineering Co., New York, to drive Sirocco blowers for forced draft at the New York-Edison Waterside station; four 200-horsepower Kerr steam turbines to drive centrifugal pumps for the Wheeler Condenser & Engineering Co., New York City; one 1,200-gallon Kerr-Worthington pump unit, head 470 feet, for the Mississippi river commission, Vicksburg, Miss.; a 1-kilowatt headlight turbine generator unit for Chas. M. Lewis & Co., Evansville, Ind.; one 60-horsepower turbine to drive centrifugal pump for the Dayton Hydraulic Machinery Co., Dayton, O. Reports from the engineering salesmen in the larger commercial centers, as well as the inquiries coming direct to the home office, indicate a rapid and real improvement in business conditions.

NILES PLANT'S GROWTH.

President W. A. Thomas, of the Niles Iron & Steel Co., Niles, O., manufacturer of sheet iron, sheet steel and corrugated roofing, announces that extensive improvements will be made to the plant, beginning in about three weeks. The company has so far purchased a large Corliss engine, rope drive system, and has let contracts for two new brick buildings, one for a machine shop, and the other for making eave spouting and agricultural implements. The plant at the present time includes four sheet mills, one tin mill and corrugated roofing works, and a galvanizing shop. With the new equipment, the company expects to make, in addition to its present line, eave troughs, conductor pipes, pressed steel seats, and other articles for agricultural implements. It is expected to put into the improvements between $75,000 and $100,000.

Six Arrests Made.—Following the recent publication of the results of an investigation by the Boston finance committee in regard to alleged collusion in bidding on city contracts, six arrests have been made on a charge of defrauding the city. Those arrested were Alfred E. Cox, treasurer of the Atlantic Works; Duncan D. Russell, treasurer of the James Russell Boiler Works; John E. Lynch, of the Hodge Boiler Works; Charles F. Coopman, of the Cunningham Iron Works; David N. Andrews, president of the Boston Bridge Works; and Charles N. Fitts, of the New England Structural Co. The cases were set for June 12 and the accused were released on bail of $2,000 each.

Checks covering the regular semi-annual dividend of the Pennsylvania Railroad Co. were mailed several days ago to 59,415 shareholders, the greatest number in the company's history, and an increase of 14,000 over the number a year ago.

FAILED TO AGREE

And Prices on Angles and Bars Are Cut in Great Britain.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., May 23.

Next to the collapse in warrants, the most interesting event of the past week has been the reported disagreement in connection with the steelmakers' combine. For some time past, as is well known, the English and Scotch steelmakers have succeeded in maintaining a recognized list of prices for the sale of certain steel sections in the home and foreign markets. Latterly there has been dissatisfaction among the Scotch makers on the ground that, as they say, the north of England makers have captured the bulk of the home and export trade in angles and bars, and have also obtained more than their share of the trade available in ship and boiler plates. The principal explanation is that the English firms are better situated as to freights to most foreign markets, especially to Japan, and other far eastern countries. To balance this the Scotch makers considered that a price concession should have been granted to them, and with this object they initiated a recent conference at Newcastle-on-Tyne. The parties failed to come to an agreement, with the result that the arrangement as to steel bars and angles for export has broken down. It is thought likely that the disagreement will soon extend to plates. The effect has been quickly seen in the cutting down of prices of angles and bars for foreign buyers. The combine price for angles was £5 7s 6d, less 2½ per cent, but sellers will now take five shillings a ton less. The complete break up of the combine would give great satisfaction to structural engineers, who complain that their business has been greatly restricted by the tying up of prices.

An effort has been made to agree on a price for rolled steel girders, but little progress has been made, mainly owing to the fact that continental makers, in view of the present state of trade, are not particularly keen on the new enterprise.

Receivers of the Passaic Steel Co., Paterson, N. J., have been authorized by the United States circuit court to dispose of the personal property of the company. The court will hear counsel further on the question as to whether the real estate should be sold by the receivers, subject to the mortgage, or whether it should allow the bondholders to institute foreclosure proceedings.

FOUNDRY EXHIBITS

Are Being Arranged at Toronto—Novel Arrangement for Picketing.

Toronto, Canada, June 1.—The work of preparation for the exhibition of foundry supplies, in connection with the American Foundrymen's Association convention is well advanced. A number of the exhibits are installed and freight is coming forward rapidly. The foundry cupola put up on the grounds has been tested and found satisfactory. Recent accessions to the list of exhibitors are:

Convention Program.

Monday evening, June 8. — Annual meeting of the Associated Foundry Foremen.

Tuesday afternoon, June 9.—Formal opening of the convention and exhibition. Joint meeting of the American Foundrymen's Association, American Brass Founders' Association, Associated Foundry Foremen and the Foundry Supply Association.

Tuesday evening, June 9.—Official Reception at the City Hall.

Wednesday morning, June 10.—Exhibition closed while the meetings of the associations are in progress. The American Brass Founders' Association will hold a meeting in a separate building.

Wednesday afternoon.—Business sessions of the American Foundrymen's Association and the American Brass Founders' Association.

Wednesday evening.—Open.

Thursday morning, July 11.—The exhibition will be closed during the business sessions of the associations

Thursday afternoon.—Business session.

Thursday evening.—Moonlight excursion.

Friday afternoon, June 12.—Trolley ride.

Friday evening.—Smoker.

The General Electric Co., of Schenectady, N. Y., which will show a new cupola blower; the Auto-Sand Mixer Co., of Brantford, Ont., which sends a sand mixing machine; the Northern Engineering Works, Detroit; and the United States Graphite Co., Saginaw, Mich.

Procuring molding sand of a suitable grade and then keeping the sand in condition are two difficulties which fall to the common lot of foundrymen. There will be two exhibits of machines designed to overcome these difficulties by mixing and tempering sand; one by the Standard Sand & Machine Co., and the other by the E. H. Mumford Co. The latter will show one of the French sand mills, which has traveled from France especially to appear at this exhibit.

As has been the case in the past two years, the Chicago Pneumatic Tool Co. will install a compressor which will furnish compressed air for those requiring it.

The running exhibits, however, will not be confined entirely to molding machines, but will include a number of interesting devices of different character for economy of labor in the foundry. The Osborn Mfg. Co. will have wire brushes in operation for cleaning castings made on the ground, while the Buffalo Forge Co. will supply the exhaust fan for removing the dust. The fan for the cupola will be driven by a steam turbine furnished by the B. F. Sturtevant Co. W. W. Sly will show his standard tumbling barrels and dust-arresting system. P. H. Baumgardner will have a core room in full operation, using Holland linseed oil.

In the Process building will be installed several gas engines of recent design, and the increasing use of gas power will make this exhibit of particular interest.

Many of the firms showing in both buildings are preparing special features for the entertainment of visitors.

A large number of new devices will be shown for the first time in actual operation or by working models. It is now planned to have a general registration desk at the association headquarters in the Process building, and also to have headquarters for each of the leading local foundrymen's associations in the same building.

At previous conventions it has frequently been difficult for members to get into communication with their friends who were present. It is hoped that establishing these local headquarters will help in overcoming this difficulty.

Admission to the buildings will be free to all members of the visiting associations, who will be admitted by badge and ticket furnished at the registration desk.

On account of the fact that many people not in the foundry business de sire to visit the exhibit simply from general interest in the processes, provision has been made for charging a small admission fee at the door to non-members. It is probable, however, that every foundryman will wish to join one of the five associations, unless he is already a member. Also, it has been found necessary to limit the entertainment to members of the visiting associations.

The secretaries of the different associations announce that a number of papers have already been prepared, insuring exceedingly interesting sessions.

The exhibitors, as well as the local committees, have been planning for the convenience and comfort of guests in every possible way. There will be ample resting facilities; many of the exhibitors will arrange to provide water coolers dispensing natural spring water from one of the noted springs in the vicinity.

The arrangement by which meetings will be held in the auditorium of the Dairy building, which is located near the exhibit buildings, makes it possible for the members to spend the entire day on the grounds, as there will be ample facilities for lunch furnished by the high class catering company.

American Foundrymen's Association.

PAPERS AND DISCUSSIONS.

"The Prevention of Accidents in the Foundry," Thomas D. West.
"Core Sands and Mixtures," A. M. Loudon.
"Coke Making for the Foundry," Dr. Richard Moldenke.
"Annealing Castings," W. M. Carr.
"Foundry Warehouse Methods," F. C. Everitt.
"Patternmaking for the Specialty Shop," H. M. Lane.
"The Elimination of Foundry Waste," H. Emerson.
"Shop Betterment," H. F. J. Porter.
"Oxy-Acetylene Welding of Castings," S. H. Taylor.
"Notes on Cupola Practice," Prof. H. McCormack.
"Titanium in Cast Iron," Dr. Richard Moldenke.
"Ferro-Alloys in the Foundry," W. M. Saunders.
"Cupola Thermics," S. H. Stupakoff.
"Specifications for Castings to be Machined," H. E. Diller.
"Foundry Transportation Methods," David Goehr.
"Further Notes on Sandless Castings," V. B. Lamb.
"Report of Cost Committee," Kenneth Falconer.

Discussions.

"Pig Iron Specifications."
"Machine Molding," E. H. Mumford.
"Use of Turnings and Borings in the Foundry."
"Automobile Cylinder Making."
"Thermit in the Foundry."
"Ethics of Selling Castings."
"Clamping Molds."
"Sea Coal Facings."
"Radiator Cores."
"Cast Iron for Mine Water."

The annual meeting of the Farmer's Co-operative Harvesting Machine Co., of Whitby, Ont., was held in Toronto May 25. It was resolved to raise $250,000 of the authorized and unpaid capital by the issue of 25,000 preferential shares of $10 each, leaving an annual dividend of 8 per cent to be paid out of profits.

In the case of the striking molders, nine of whom were arrested last week for picketing the Buck Stove Works, at Brantford, Ont., a temporary adjustment

has been granted. The men were released, after a short detention on bail, and are to be allowed to continue picketing provided their names and the hours they are on duty are given to the police. They agreed to preserve the peace and to be sworn in as special constables. This arrangement is pending the decision of Judge Hardy as to the legality of peaceable picketing, for which about 100 molders will come up for trial on June 9. The influence of the "labor vote" in the provincial elections, which take place on June 8, was an important factor in bringing about this adjustment.

American Brass Founders' Association.

PAPERS AND DISCUSSIONS.

"The Value of Liquid Fuel in Brass Foundry Practice," W. N. Best.
"The Efficiency of Brass Melting Furnaces," F. A. Coleman.
"The Metallurgy of the Bronze Age in Europe," W. M. Corse.
"Modern Appliances and Processes in Foundry Work," F. H. Dimock.
"Quality versus Quantity," J. N. Gamble.
"Prolonging the Life of a Crucible," Dudley A. Johnson.
"The Outside versus the Inside Man," W. A. Porter.
"The Electro-Chemical Cleaning of Metals and Its Application to Commercial Uses," Chas. H. Proctor.
"Oil as Fuel," W. S. Quigley.
"The Relation Between the Chemical and Physical Characteristics of Molding Sands," Dr. Heinrick Ries.

Joseph T. Gilman, third vice president of the Goodwin Car Co., New York, is in Western Canada introducing the Goodwin railway car to railway contractors. He states that 20 cars will be furnished to railway builders for experimental purposes, and that if the company is successful in creating a demand for them a branch shop for their manufacture will be established in Canada, the probable location being Winnipeg.

The main building of the Imperial Stove Works, Ltd., of Morrisburg, Ont., was destroyed by fire May 25, only the foundry, office fixtures and papers being saved. The loss is $25,000, fully covered by insurance.

Equipment Wanted.—The Glacier Metal Co., Richmond, Va., will require in the near future furnaces for the manufacture of babbitt metal, brass, etc. It will be pleased to receive communications from manufacturers of such equipment. It will also be glad to receive data on reclaiming metal from drosses and extracting tin from old cans. The company will probably employ pots containing from 1,000 to 2,000 pounds.

DEPLORE WAGE CUT.

Independent Coke Makers Pass Resolutions Against Reduction.

A resolution deploring the recent action of several independents in reducing the wages of coke operatives, was adopted at a meeting of the Independent Coke Producers' Association held at Uniontown, Pa., recently. The resolution follows:

Whereas, It has come to our knowledge that certain coke operators have reduced the wages of their employes below the rates provided for by the scale adopted by the Coke Producers' Association and the H. C. Frick Coke Co.; therefore, be it

Resolved, That we, the members of the Coke Producers' Association of the Connellsville coke region, deplore the action of certain coke operators in reducing wages of workingmen employed in and about their mines and coke works below the regular rates set forth in the existing scale; that we oppose and condemn such action as unnecessary, uncalled for and against the best interests of both employer and employe; that it is the sense of this association that in all cases where the provisions of the wage scale are being violated or wages reduced below its rates, that such violation be corrected and wages be accordingly restored to the rate fixed by the scale.

WORKING CONDITIONS OF MINERS AGREED UPON.

After an extended conference between the coal operators and the representatives of the United Mine Workers of America in the Pittsburg district, all the working conditions included in the wage scale of the past two years have been reaffirmed, and will be in force until April 30, 1910. The settlement of the working terms for the next two years, has been a matter of sharp controversy for a number of weeks between the operators and the men, and a strike of the miners in the Pittsburg district has been threatened. About 35,000 miners will be affected by the adjustment and mining operations will be resumed more fully when business conditions are more settled. The late beginning of iron ore shipments on the lakes is holding back the customary coal movement to the northwest.

Orient Coke Meeting.—The annual meeting of the Orient Coke Co. was held at Uniontown, Pa., May 22. The reports presented relative to the company's business during the past year were very satisfactory. In connection with the meeting, which was attended by a number of officers and stockholders from various cities, an inspection of the company's property was made. The following officers were elected for the year: President, Julian Kennedy; vice president, Robert Bentley, Youngstown, O.; secretary and treasurer, Reed Kennedy; assistant secretary, R. M. Fry; general manager, Orrin W. Kennedy; directors, Julian, Reed and Orrin Kennedy, Chas. J. Morris, Evanstown, I.; T. F. Woodman, Youngstown, O.; Chas. McKnight, Pittsburg; and Robert Bentley, Youngstown.

SCHWAB ON BUSINESS CONDITIONS.

"There has been a decided improvement in the iron and steel trade, and business conditions generally. The worst is now over and business is bound to improve," said Chas. M. Schwab, president of the Bethlehem Steel Corporation, during a press interview in Pittsburg recently. "While I do not look for a big boom in the near future," said Mr. Schwab, "I feel confident that all lines of business will continue to improve and that the coming period of prosperity will be founded on a solid foundation. The increase in business will be gradual. The Bethlehem Steel Co. is operating to capacity, and some departments are working double turn. We have expended more than $20,000,000 for improvements and enlargements during the last two years. I will not say there will be a big boom in the near future. I do not want to say anything to the public that I do not believe myself. But I do know that there has been a decided improvement in many lines and the country is in better condition than a few months ago. Business men are more confident now, and I fully believe that the worst is over. We cannot expect a boom at this time, but we can look for a gradual increase in the volume of business. Prices are being maintained and the country is sound."

Enlarging Cement Plant.—Contracts have been awarded to the National Building & Construction Co., Ellwood City, Pa., for the construction of extensive additions to the plant of the Crescent Portland Cement Co., at Wampum, Pa. The new buildings will comprise a kiln building 100 x 200 feet, a raw grinding building 100 x 280 feet, a dry grinding building 60 x 240 feet, a coal pulverizing building 70 x 100 feet, stock house 70 x 500 feet, and a machine shop and office building. The buildings will be of concrete with structural steel trusses and tile roofs. About 3,000 barrels daily will be added to the capacity of the plant by the improvements.

At the conclusion of the recent meeting of the Sloss-Sheffield Steel & Iron Co., a director expressed the opinion that the former dividend rate of 1¼ per cent will be resumed before the end of six months.

THE OHIO SOCIETY OF MECHANICAL, ELECTRICAL AND STEAM ENGINEERS.

The Ohio Society of Mechanical, Electrical and Steam Engineers held its regular spring meeting at the Hotel Chittenden, Columbus, on May 22 and 23. The afternoon of May 22 was given up to a trip to Ohio State University where the members were piloted through the buildings by Prof. William T. Magruder, professor of mechanical engineering. The new laboratory of the engineering school was visited, together with other points of interest about the university.

The first regular session was held at the Chittenden on Friday evening. Prof. R. H. Fernald, of Case School of Applied Science, and formerly in charge of the fuel testing bureau at the St. Louis exposition, gave an illustrated lecture on producer gas plants. Prof. Fernald discussed the troubles encountered by manufacturers who endeavored to adapt engines designed for operation on city gas to use on producer gas. He showed clearly that the engine designed for one service was entirely unsuited for the other service, being much too light and of wrong design in the cylinder. Higher compression pressures are required with producer gas and in adapting their engines from city gas to producer gas service, the manufacturers had usually added a compression plate to the piston. This introduced complications in the way of cooling and destructive strains were set up thereby. In almost every case where this work had been tried, the troubles encountered were such that the engine had to be removed by the manufacturers and one of correct design substituted.

Leaving this phase of the question, Prof. Fernald then took up the action of a suction gas plant and stated that 20 per cent of the power generated by the engine was lost in drawing the gas and air through the producer, scrubber and pipe systems. He took up the question of the use of the suction plant with different fuels, namely, anthracite, charcoal and coke, and stated that at Omaha a producer operating on charcoal fuel at the cost of $13 per ton was run cheaper than the same plant could be when using city gas at 90 cents per thousand. Charcoal forms an almost ideal fuel for suction gas plants, but its high cost, as compared to anthracite and coke, is against it. Considering pressure producer plants, Prof. Fernald stated that additional complications are introduced, inasmuch as bituminous coal is used in the pressure plant and 300 pounds of tar are formed with each ton of bituminous coal and that no good method as yet had been found of using this tar, which must be extracted in a centrifugal gas washer and disposed of as waste product, it being impossible to allow it to enter the engine.

Speaking of the action of sulphur in gas engines, Prof. Fernald said that it does no harm to the engine if the gas is dry. If there is any moisture present in the cylinder, the sulphur will form a weak solution of sulphuric acid which will rapidly corrode the cylinder. In the plant installed at the St. Louis exposition, a purifier was installed to take up the sulphur but it was found that it would last only about six hours before becoming clogged up, making it necessary for the charge to be renewed. After making this discovery, they ran with the purifier cut out and no ill effects resulted.

L. G. Finlay was scheduled to present a paper at this session on the gasification of low grade fuels, but telegraphed at the last moment that he was unable to be present.

Saturday morning was devoted to a business meeting of the society at 10 o'clock, at which the reports of the secretary, treasurer and council were presented. Prof. Magruder presented at this session a report of the committee for memorializing the state legislature on industrial education and T. W. Shelton presented a paper on "The Construction of Catenary Trolley Wire." Saturday afternoon the members and guests visited the dam and filtration plant of the municipal electric lighting plant of Columbus and at the evening session W. W. Jackson, engineer of water supply of the Columbus water works, presented a paper entitled "Some Data on the Water Purification Works at Columbus;" W. J. Springborn, president of the Cleveland board of public works, presented a paper describing the Cleveland garbage disposal plant.

The first bar of rolled steel turned out at the new plant of the Norfolk Iron Co., Norfolk, Va., was produced May 19. The plant is now in operation, and will make hoops, cotton ties and steel rods. The officers announce that the output is already sold for some time to come.

SEEKS CAUSE OF FAILURE OF BRITISH INDUSTRIES TO GROW.

Commenting upon the great increase per capita of the consumption of iron in the United States and Germany, and the failure of the United Kingdom to increase its per capita production by any percentage, the *London Commercial Intelligence* goes on to say:

We have seemed to forget that while in the United States the principal iron ore deposits are 1,000 miles from the coal fields, and that while the furnaces, on account of the coal, are between 400 and 500 miles from a shipping port, we in this country have the ore, the coal, the furnaces, and the ships practically side by side For iron and steel production and exportation we possess a combination of natural and geographical advantages enjoyed by no other country. Today we can get ore from Spain and Scandinavia—and could get it from Newfoundland if necessary—at much less cost for freightage than our American rivals can get their own ore from Lake Superior mines to Pittsburg furnaces. In Germany the coal is neither so good nor so cheap as in this country. Germany's iron ore is no better than, but slightly inferior to, our own. Besides, in Germany the natural conditions are such that it costs between 6s and 7s per ton to carry either the coal to the ore or the ore to the coal. Our failure must be due to some cause outside the ordinary conditions that affect commercial rivalry. It must be due to failure to secure for our industry equal conditions with those obtaining abroad.

The Struthers Furnace Co. works at Struthers, O., and main office Citizens building, Cleveland, has just issued a booklet filled with handsome illustrations showing the possibilities of Struthers cement in important cement work. The Struthers Furnace Co. placed Struthers cement upon the market six years ago, and its record during that period is clearly defined by the letters of approval and illustrations contained in the new booklet. This catalog is one of the handsomest specimens of the lithographers' and printers' art that has been issued to the trade in many a day.

Eastern stockholders of the Chicago Pneumatic Tool Co. say that it is improbable that dividends will be resumed at the next meeting of the directors of the company some time in July.

A special meeting of the stockholders of the Westinghouse Electric & Mfg. Co., called for two weeks ago, and at that time adjourned until May 28, has again been adjourned until June 11.

THE KEYSTONE STRUCTURAL WORKS OF THE JONES & LAUGHLIN STEEL CO.

The Keystone Works is the title of the new structural plant of the Jones & Laughlin Steel Co. recently erected on the site of the Keystone Rolling Mill on Second avenue, Pittsburg. It is located on the north side of the Monongahela river on an approximately rectangular plot 540 feet long by 400 feet wide, having an area of about five acres. Formerly, it was situated at the extreme western end of the south side plant, but the erection of large modern mills for structural shapes and the extension of the open-hearth furnace plant rendered its position no longer tenable. It was also the aim of the management to provide better facilities for promptly producing fabricated structural material.

The new location is about midway between the Eliza and Soho furnace plants, allied interests of the same corporation. In order to get out of the reach of all but extraordinary floods, considerable filling was necessary, ranging from 2 to 10 feet over the entire surface of the property. Railroad connection is had with the Monongahela Connecting Railroad at the river end of the property, necessarily with sunken tracks.

The foundations, including that of the power plant, are all of concrete, the forms for which were located in advance of the filling, saving expense for excavating.

The General Plan.

Shops Nos. 1 and 2 are practically under one roof, with spans of 84 feet and 55 feet, giving a total width of 130 feet by 260 feet in length. Shop No. 3 has a width of 60 feet with a 30 foot lean-to, maintaining a uniform length of 260 feet. It is well lighted and admirably equipped for the work—the fabrication of columns—for which it is intended. The lean-to is arranged to take care of the shop office, general lavatory, also the machine shop, blacksmith shop and various other subsidiary operations. Shop No. 4 is a two-story building running parallel with and next to the street. The lower story furnishes accommodation for the time clock system by which the employes' time is recorded. The supply department is also in this building conveniently arranged for rereceipt of team deliveries. A stock of template lumber is carried on this floor. The remaining portion is used as a shop for light plate or sheet work. The second story is used as a template room. It is well lighted and equipped for caring for such work, and is directly connected by a bridge with the drafting room on the second floor of the office building.

It will be seen by reference to the plans that the entire site has been covered with cranes or buildings or both, the receiving and shipping yards being placed at either end of the shops, the purpose being to carry the work to completion as it is passed through them. The space between the shops is assigned as stock yards. The river front is used as a stock yard for beams and channels, a representative stock being carried for prompt service. Stock material is piled in a 70-foot span and after being cut with a high speed, hydraulic feed cold saw is carried on live rollers into the 35-foot span, whence it can be transported to the receiving yard

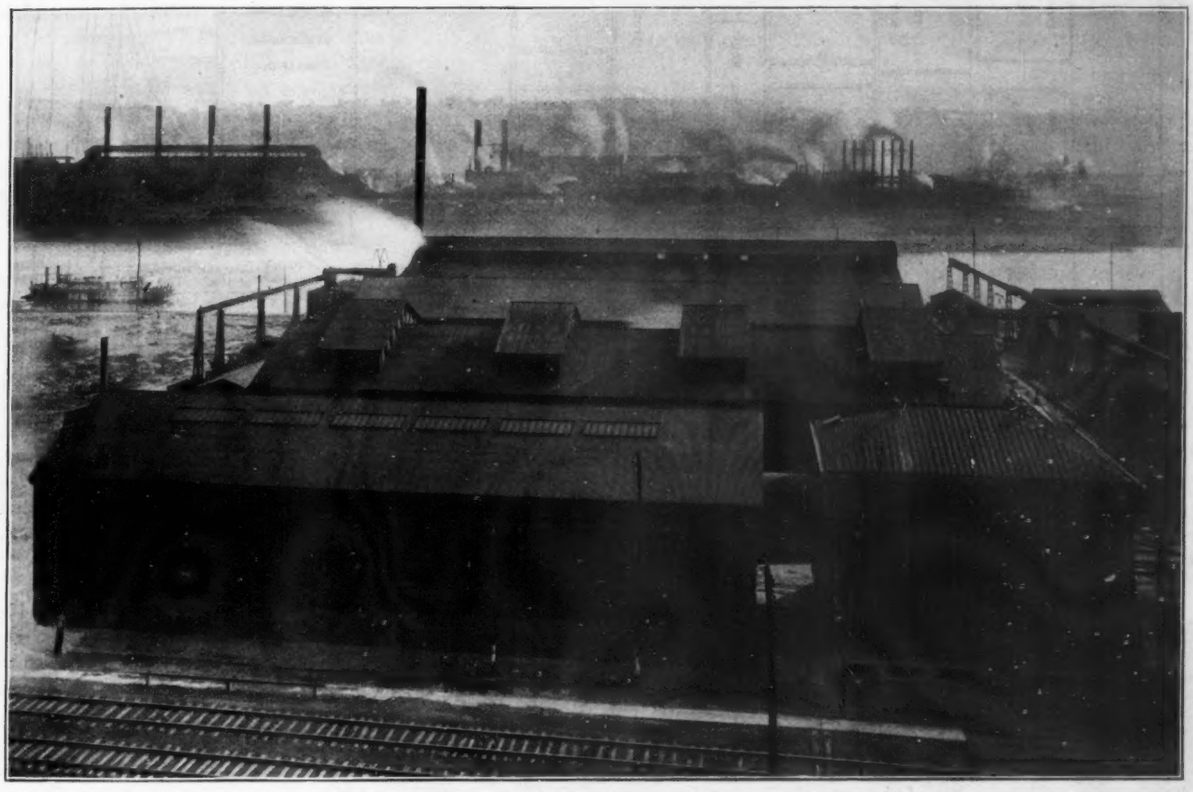

FIG. 1—GENERAL VIEW OF WORKS TAKEN FROM HILLS.

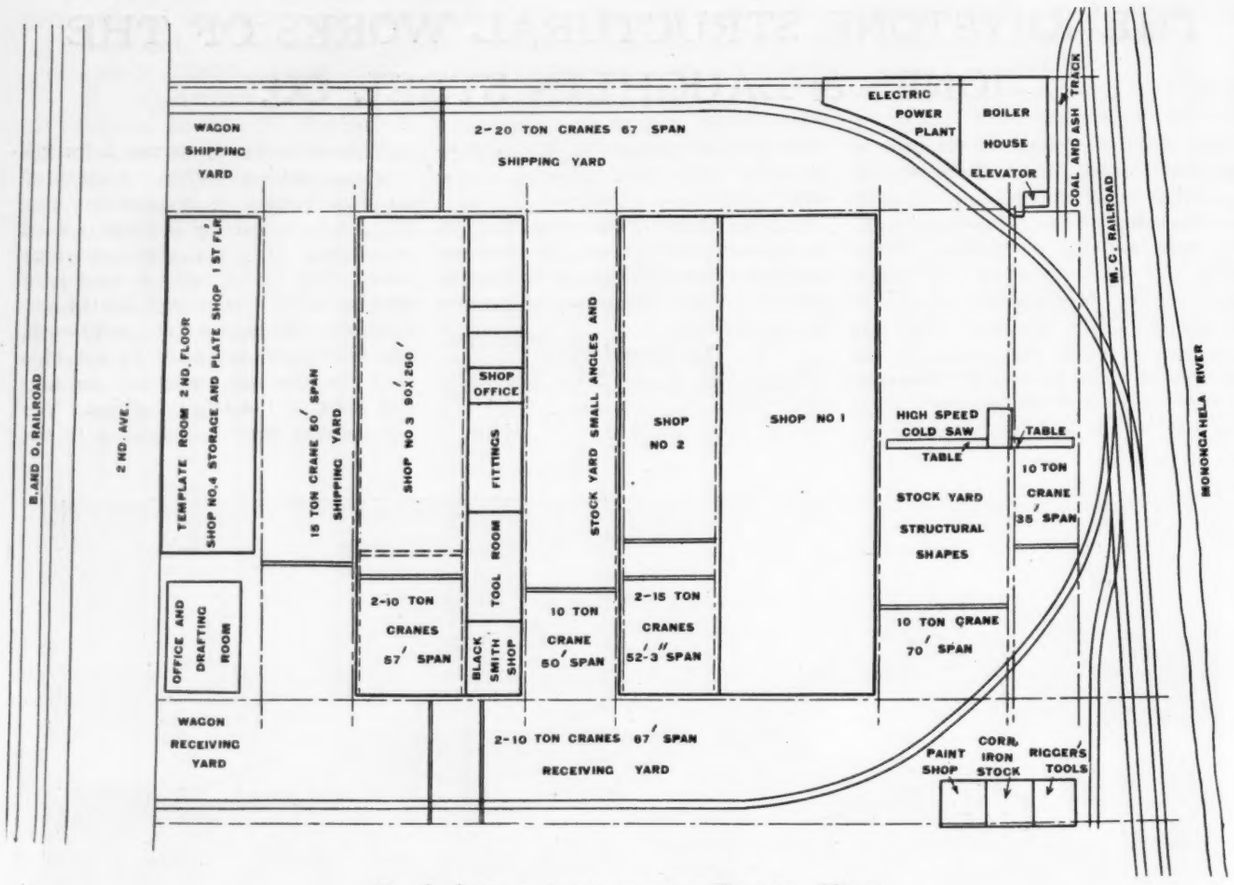

FIG. 2—GENERAL ARRANGEMENT OF KEYSTONE WORKS.

and thence to the shops, or loaded as plain material directly into cars for shipment.

The product of the plant can be shipped either by rail or team.

System of Cranes.

The cranes, 12 in all, of capacities ranging from 10 to 20 tons, are of the Morgan type. They are distributed as follows: Two in the receiving yard, four in the stock yards, two in the shipping yards and four in the shops.

The transverse craneways carrying the stock yard cranes project at either end under the longitudinal runways, thus allowing transfer of material without any unnecessary handling. Material can be transferred over the whole plant from one point to another so readily that narrow gage tracks have, therefore, been almost eliminated.

The internal arrangement of the shops was planned with a view of performing certain definite operations in each. There is, however, sufficient flexibility to allow for the ready execution of various quantities of all classes of work.

Shop No. 1 is arranged primarily for a beam shop and is well fitted to care for a large tonnage of ordinary punched and framed material. In addition to the punches, coping machines and stationary riveters, there are special tools such as angle rolls, bulldozer, etc. A light telegraph system secured to the bottom chords of the trusses provides an easy means of handling the material which is usually not excessive in weight.

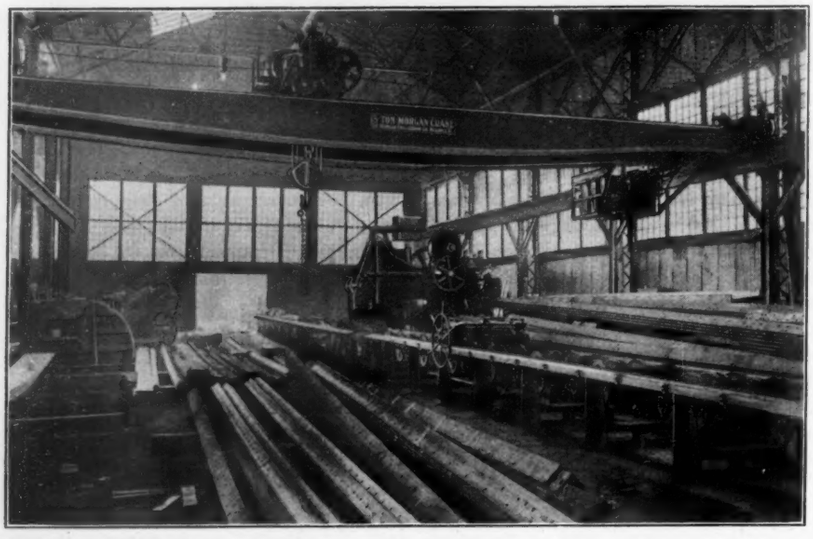

FIG. 3—PUNCHING END OF GIRDER SHOP, SHOWING SPACING TABLE ATTACHED TO PUNCH. NO. 2 SHOP.

The Girder Shop.

Riveted work such as girders, trusses, etc., is fabricated in shop No. 2. Two electric overhead traveling cranes handle the material to the machines and aid in its assembling. The tools are substantial and of standard

types consisting of a 48-inch gate shear of medium capacity mounted on a turntable, a deep throat Sellers punch with multiple arrangement and having a spacing table attached, rotary angle shears, fitting punch, reamers, etc.

The Thomas spacing table is intended to eliminate marking. Spacing is obtained from a spacing strip prepared in the template shop and attached to the table, and by steel pegs at the predetermined points which automatically lock the carriage in its travel over the table. The machine will handle plates up to 60 inches wide and 50 feet long, and angles up to 8 x 8 inches. The assembly skids are secured to foundation beams embedded in concrete, all in perfect alignment, making a good installation with a solid and permanent floor. The riveting is done with pneumatic riveting machines of which several types are in use. There are also a large number of pneumatic hammers in general use throughout the plant for work not suitable for the compression riveter.

The column shop, No. 3, has its full quota of tools, the most important feature being a powerful 42-inch face rotary planer, which, with the assistance of the double ended tool originally in use, furnishes ample capacity for work of this character. An interesting machine located here is a spacer built by the Standard Bridge Tool Co. for punching detail plates which as far as tested, gives great promise of success.

This machine does away with the marking of detail pieces. A card board template is clamped directly upon the piece to be punched, and this works in connection with an indicator mounted directly on the stem of the punch, and controlled by the clutch lever. Detail plates up to 4 x 4 feet in dimension are handled. Shop No. 4 needs no further description.

In the blacksmith shop tool blanks are made under a five-ton steam hammer and all the tempering and annealing of finished tools is carried on.

The entire plant is well lighted, most of the buildings having monitors or skylights, the latter being glazed with ribbed glass.

It should be noted that all tools are driven electrically, either directly or in groups, the only exception being the bulldozer and 5-ton hammer which are steam driven.

Excellent lavatory facilities have been provided for the men, as, in addition to the installation in the general lavatory, there are also other equipments of the same character in No. 1 and 4 shops.

FIG. 4—ASSEMBLING END OF GIRDER SHOP, SHOWING OPEN CONNECTION WITH NO. 1 SHOP.

The Power Plant.

The power plant is placed at a higher level than any other part of the plant, the purpose being to keep it above the highest range of water that has ever been experienced on the Monongahela river. Two 400-horsepower Wickes vertical water tube

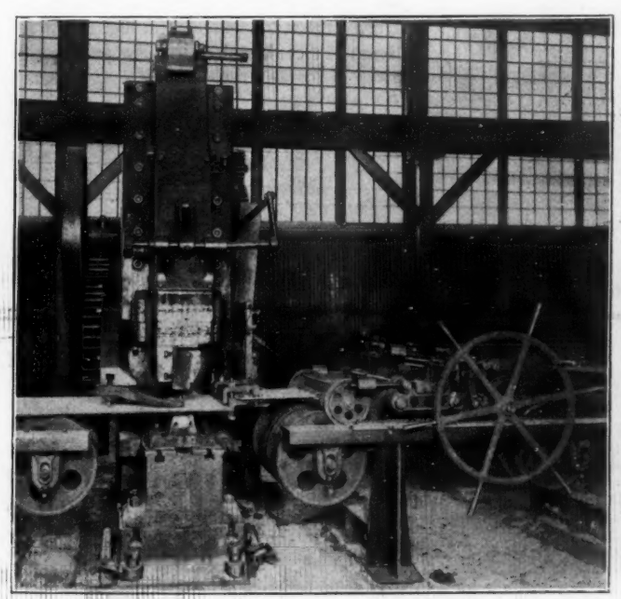

FIG. 5—THOMAS SPACING TABLE ATTACHED TO SELLERS PUNCH IN NO. 2 SHOP.

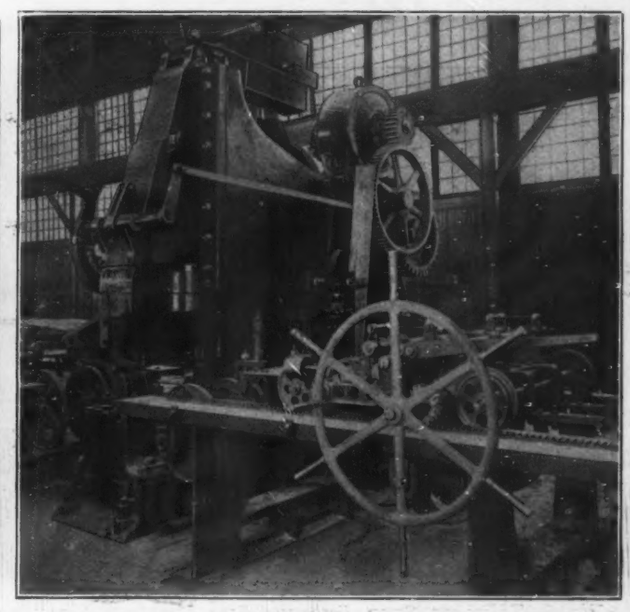

FIG. 6—ANOTHER VIEW OF THE THOMAS SPACING TABLE ATTACHED TO SELLERS PUNCH.

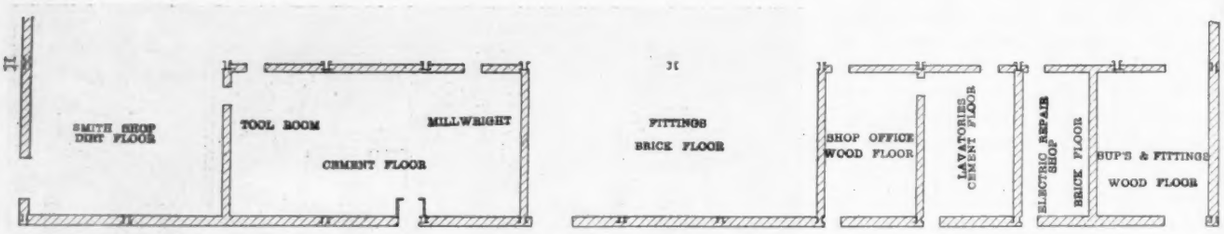

FIG. 7—PLAN OF LEAN-TO, SHOP NO. 3.

boilers furnish the steam for operating the 900-horsepower single noncondensing Corliss engine. These boilers are equipped with Murphy stokers and the necessary feed water heaters and pumps. The Corliss engine built by the Wisconsin Engine Co. has direct connection with a 600-kilowatt Allis-Chalmers generator providing ample power for all requirements of the plant, including arc and incandescent lighting.

Direct current at 220 volts is used. The plant is also connected with the power stations of the Soho and Eliza furnaces so that any temporary disability does not interfere with operations.

Compressed air for pneumatic tools and hoists is supplied by a 24 x 30-inch straight line Rand compressor with two smaller machines, one of the same type and one built by the Hall Steam Pump Co. in reserve.

A three-story office building houses the clerical and drafting forces. It is well arranged for taking care of the business of the plant, the executive offices being on the first floor, the drafting room on the second with room for extension on the floor above. The third floor is partially occupied by a dining room, giving the men an opportunity to eat their lunches out of the offices.

The project was authorized on April 16, 1907, and was practically commenced May 22. On June 17, concrete operations were begun and on Aug. 30, the first tool was turning out fabricated work.

The estimated capacity is 50,000 tons per year, and with its ability to turn out a wide range of varied classes of material, it should have ample opportunity for development.

FIG. 9—TEMPLATE SHOP, SHOWING SIDE LIGHTING ARRANGEMENT AND HEATING PLAN.

CARNEGIE STEEL CO. COMPLETES LARGEST GAS PRODUCER PLANT IN THE WORLD.

The Carnegie Steel Co. has just completed at its Duquesne works a plant of

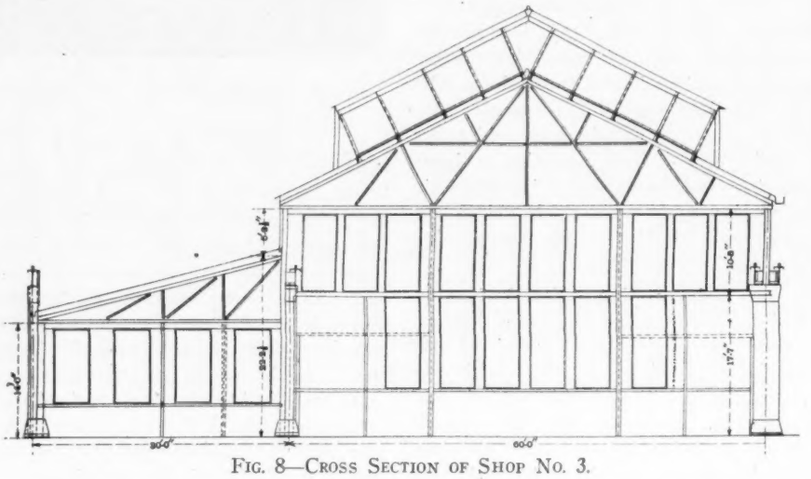

FIG. 8—CROSS SECTION OF SHOP NO. 3.

64 gas producers which will be employed in the operation of 32 open-hearth furnaces. The producer plant has a capacity of gas sufficient for the production of 4,500 tons of open-hearth steel daily. In extent it is one of the largest in the world and the only one of its kind in the United States, which automatically delivers the coal, stokes the fire and carries away the ashes. The daily fuel required for the full operation of the producer plant is 1,500 tons. At the present time, the plant is working satisfactorily with six furnaces.

The new open-hearth furnaces under construction at the Duquesne plant are 18 in number with a capacity of from 60 to 75 tons each. The old furnaces have a capacity of 50 tons. Six of the new furnaces have already been completed, but it is not expected that the entire plant will be finished and in operation for a year.

The New England textile wage scale, which became effective May 25, reduced the wages of 25,000 operatives 17.94 per cent. The Fall River cut swells the number of operatives whose wages have been reduced to 170,000.

RECORDING AND ACCOUNTING FOR TIME[1]

By Oscar E. Perrigo.

In the complex duty of ascertaining the cost of the product of an establishment there is a considerable number of quite separate factors to be considered, usually grouped under the general heads of labor, material and overhead charges. The subject of purchasing, storing, issuing and accounting for material has been quite thoroughly considered and more or less exact systems have been proposed by various authorities on these questions. The matter of ascertaining and apportioning the overhead charges has also received a good deal of attention. The question of accounting for labor, while it has received much careful attention, does not seem to have reached such an advanced condition as either of the other factors.

Fig. 10—Receiving Yard, Showing Track Arrangement and Craneway.

While the full measure of importance is given to the question of the cost of materials in manufacturing operations and to the necessity of a careful analysis of the various items of expense going to make up the burden of overhead charges, the question of recording and accounting for the time employe has seemed such a simple process that its importance has frequently been either overlooked or considerably minimized, and the result is that in many cases imperfect and unreliable methods are employed.

It is a comparatively easy matter to account for the total time, the number of hours per day, or per week, upon which the workmen have been employed.

It may be well to consider briefly the different methods that have been used in recording and accounting for time. A few years ago the foreman kept a "Time Book," of convenient dimensions to carry in the pocket. This book contained a list of his men and proper rulings for the days of the week. Once each day he inquired of each man how many hours he had worked and entered the time according to the information received. Other than by personal observation he had no means of knowing whether the account was correct or not.

Even when there were numerous departments in the shop, each under a foreman, the same method of recording time was in use, the foremen's time books being turned in to the time clerk at the end of the week. Later the time clerk, provided with a book, frequently much larger than the foremen's had been, and containing a list of all the employes, made daily rounds, sometimes twice daily, but the time was taken as given by the employes themselves. The difficulty of not always getting the exact truth from the employes led to providing one door for the entrance and exit of the workmen and closing all others. At or before the signal for commencing work the time clerk took his place at this entrance and noted in his book all late comers. To be sure he was sometimes late himself, and he was likely to have some friends who were never late. But there was no check on his mistakes, whether made honestly or through favoritism; the employer had no evidence in case of a dispute, and as a matter of discipline he generally agreed with

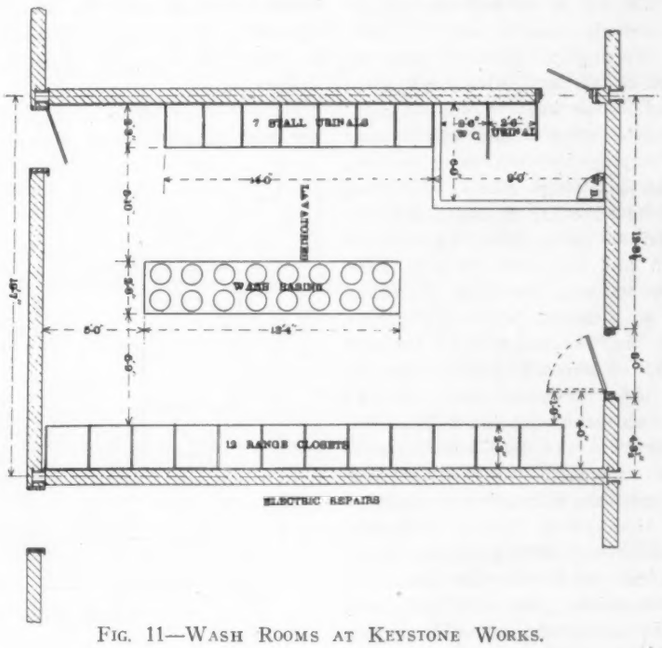

Fig. 11—Wash Rooms at Keystone Works.

[1]Ninth of a series of articles on shop management and cost keeping.

the timekeeper, however loud might be the protest of the workman.

Another scheme was to provide brass checks, numbered to correspond with the men's numbers on the time book. These were hung on hooks on a check board at the entrance door. From which that was made up. To make them more convenient they were printed on cardboard, and were frequently called "job tickets." Generally the name of the concern was prominently printed at the top, and the earlier ones used did not have part and the operation upon it, the number of pieces and the rate. This was approved by the foreman and became the authority for payment. These slips were not printed blanks, but entirely written, and called "job tickets," or "piece work" tickets. They gave

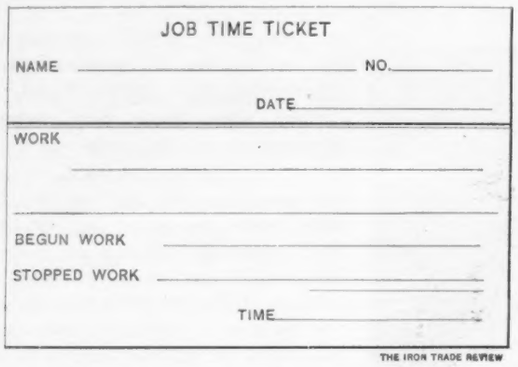

FIG. 1—AN OLD STYLE JOB TIME CARD.

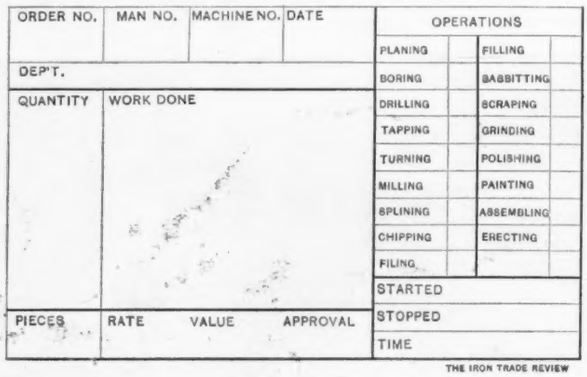

FIG. 2—A FAVORITE FORM OF JOB TIME CARD.

As the men entered each took his check from its hook and dropped it into a box provided for the purpose At the signal for beginning work the clerk removed from the board all remaining checks and held them in his office to be called for by those men who arrived late, when their time of arrival was noted. Previous to the time for the men to quit work the checks were again hung upon the board, ready for the departure of the men. This was a method that might be trifled with, since it was easy for a man entering on time to take off his own check, and also that of a friend whom he knew would be late; and it also offered the opportunity for an employe leaving early to play tricks on his shop mates by taking from the board other checks beside his own, and so raise questions between the men and the time keeper. The consequences were that a good deal of friction was caused between the men and the time keeper, and frequent questions of veracity had to be settled by the superintendent.

To avoid the continual disagreements between the timekeeper's record and the contentions of the workmen, and to provide a check on the time record, time cards, Fig. 1, were devised which not only gave the hours of entering and leaving the shop, but described briefly the kind of work which the man was doing. These were slips of paper rather than cards, and one was made out by the workman each day, and usually deposited in a box, or handed to the foreman. They were supposed to check up with the time book without regard to the data the man's number, probably for the reason that the men were not numbered on the time book, as was the practice later.

Various forms of these cards were devised to suit individual ideas and special conditions, but hardly any of them attempted to do more than to give the class of work upon which the man was engaged, and the title of "job time ticket," was doubtless derived from their early use in jobbing shops to account for the time on these special or repair jobs, the labor cost of which was made up from these tickets.

In manufacturing establishments the cost of parts, or of separate operations on parts, were obtained from the prices paid for the work on the "piece work" plan. In carrying out this plan small cards or slips of paper went with the work, giving the name of the workman, the name of the no information as to the time occupied in doing the work. It was customary, however, to make up the week's pay account of an aggregate of these job tickets, and of such work as had been done during the week at an hourly rate. This total was compared with what the workman would have been entitled to had he worked the entire week at his hourly rate, and these amounts were submitted to the manager or superindent; and if the amount seemed to him too high he considered the advisibility of a cut in the piece work rate. The question that the workman might be a better workman than his hourly rate would indicate, did not seem to affect the matter. Just here much injustice was done to workmen by cutting prices, and to the concern by reduced output.

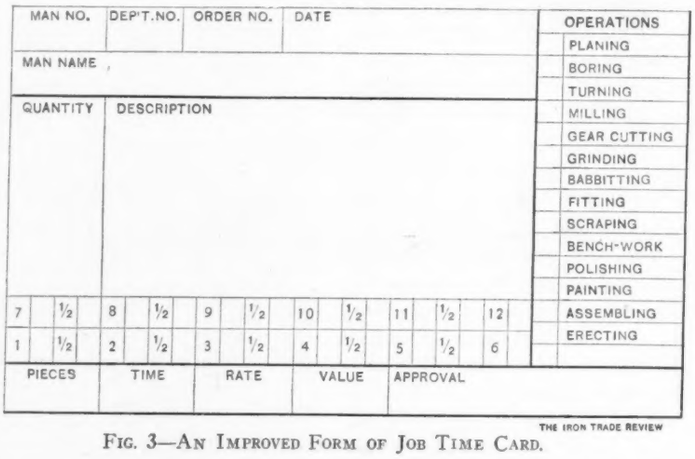

FIG. 3—AN IMPROVED FORM OF JOB TIME CARD.

As the scope of usefulness of the time card increased and single opera-

tions came to be specified, it was found that much confusion crept in on account of the different ways the workmen had of describing the same operation. This confused the timekeeper, who was not usually a memechanic and frequently would not recognize the operation if he saw it performed. The first real improvement to be noted in the time card was that of printing the different operations on the card, as in Fig. 2, so that a single check mark would show the particular operation intended. The idea was, not only to facilitate exactness of description, but to reduce the amount of writing necessary.

The idea was still further developed in the form of card shown in Fig. 3, upon which the hours and half hours of the regular working day were printed, and by using the blank spaces as quarter hours this division of the hour was made. The workmen simply checked the time commenced and time completed on these figures, usually by penciling a circle around the desired numbers. The time keeper calculated the elapsed time.

Another form of card upon which the time is divided into five minute periods, is shown in Fig. 4. It is used in the same manner as that shown in Fig. 3. With this arrangement a much larger card is required, which is a disadvantage in first cost and in the subsequent filing operations.

Still another and a very elaborate form of time card is given in Fig. 5.

FORM 7 JOB CARD	This card must be filled out by the Foreman or his Clerk, and given to Workman with the Job. Send Carbon Duplicate to Office. Workman must return Card to Foreman as soon as he completes work. Foreman to check each operation.			
SHOP ORDER NO.	DRAWING NO.	PIECE NO.	NO. PCS. IN JOB	OPERATION
DEP'T. NO.	MACHINE NO.	WORKMAN'S NO.	WORKMAN'S NAME	RATE
TIME STARTED	DATE	HOUR	DATE	HOUR
TIME INTERRUPTED				
TIME RESUMED				
TIME FINISHED				

INDEX TO DEPARTMENT NUMBERS:

NO.	DEP'T.	NO.	DEP'T.	NO.	DEP'T.	NO.	DEP'T.
1	STORES	8	BENCHES	15	FLANGING	22	SHIPPING
2	CUTTING OFF	9	PLANER	16	SETTING UP	23	
3	LATHES	10	ERECTING	17	PAINTING	24	
4	MILLING	11	FORGE	18	PATTERNS	25	
5	BORING	12	PUNCH & SHEAR	19	BRASS FOUNDRY	26	
6	TURRET WORK	13	SAWS	20	WOOD-WORK	27	
7	DRILLS	14	RIVETING	21	WAREHOUSE	28	

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FIG. 5—AN ELABORATE JOB TIME CARD.

In this card a complete index of departments is given, instead of devoting the usual space to a standard list of operations. In the shops where these cards were used there was apparently more difficulty in having the department numbers written correctly than there was in properly specifying the machine operation that had been performed. In view of the matter printed on this card it should be said that it is not usually desirable to print upon blanks or cards minute and detailed directions for their use. It occupies valuable space; the directions are not generally read by the employes, and frequently must be still further explained verbally; and when the routine is once familiar to the force such directions are not necessary. Cards and blanks should be so arranged that the least amount of writing will fulfill the requirements.

Fig. 6 shows a novel form of time

TIME CARD

WORKMAN'S NO. _____ DATE _____

	HRS.	MINUTES											
DATE COMMENCED _____	7	5	10	15	20	25	30	35	40	45	50	55	
	8	5	10	15	20	25	30	35	40	45	50	55	
ORDER NO. _____	9	5	10	15	20	25	30	35	40	45	50	55	
	10	5	10	15	20	25	30	35	40	45	50	55	
CATALOG NO. _____	11	5	10	15	20	25	30	35	40	45	50	55	
	12	5	10	15	20	25	30	35	40	45	50	55	
NUMBER OF PIECES _____	1	5	10	15	20	25	30	35	40	45	50	55	
	2	5	10	15	20	25	30	35	40	45	50	55	
OPERATION NO. _____	3	5	10	15	20	25	30	35	40	45	50	55	
	4	5	10	15	20	25	30	35	40	45	50	55	
DATE FINISHED _____	5	5	10	15	20	25	30	35	40	45	50	55	
	6	5	10	15	20	25	30	35	40	45	50	55	

APPROVED _____ FOREMAN

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FIG. 4—A TIME CARD ARRANGED FOR 5 MINUTE DIVISIONS.

card, in which the workman marks at the outer edge of the printed clock dial the time he commences a job and again when he stops work, connecting the two points by a pencil line forming an arc around the dial, the divisions on which permits the quarter hours to be indicated. He also places a pencil stroke in the column headed "check," opposite the operation he has performed. The timekeeper writes in the elapsed time.

The time card shown in Fig. 7 is intended for use when several men are at work on a job and the gang boss is required to turn in a record of the time of each man so as to present a complete account on one time card. This form is very convenient when short jobs, such as repairs, form a considerable portion of the work.

Thus far all the time cards shown require more or less writing in recording the time, and in nearly all cases it is done by the man performing the work. In this connection there are two conditions that should always be considered. 1. Most shop men are much averse to doing any writing whatever. 2. Such written records are unreliable and of little use as

accurate information, on account of the objections of the men to making them, and the carelessness with which they are made. Few men will make entries on the card when stopping work on one job and beginning on another. It is left until the close of the day, and just before quitting time the workman is in a hurry to finish his work. So this duty goes over to the next morning, and if the man has worked on several different jobs he depends entirely on his memory and apportions his time to the several jobs about what he thinks is right. He has no data by which he may be sure, and he takes little interest in being exact in the matter.

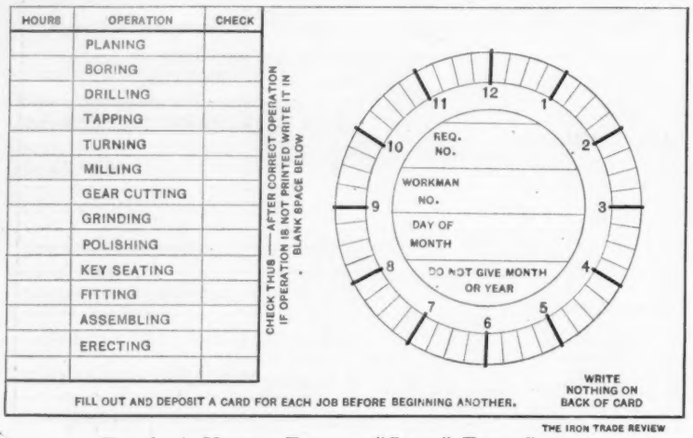

FIG. 6—A UNIQUE FORM OF "CLOCK" TIME CARD.

The fact that these methods were so faulty and unreliable was ample reason to look for something better, and the result was the invention of registering or recording devices, notably the recording time clock, in which, by the dropping of a card into a suitable receptacle and manipulating a lever, the exact time, to a minute, is printed on the card; or by swinging a radial arm to any one of a series of numbers and pressing the knob attached to it, the workman's number and the time is printed upon a strip or ribbon of paper. Still others make the record upon a disc of paper, ruled with radial lines, and having the man's number at the outer edge of the circle. Another form of recording time clock is one in which each employe is assigned a numbered key, which he inserts in a keyhole in the clock, gives it a quarter turn, and withdraws it, thus registering his number upon a strip or ribbon or paper, which moves forward one space at each registration.

All of these clocks are operated very quickly, it being entirely practicable for a hundred men to register in a single clock in seven minutes, and the registering or recording apparatus is very seldom out of order, but works regularly and accurately for months with no attention but to supply it with an inked ribbon such as used in typewriters, or the proper kind of paper in those clocks registering in this manner. By the use of these clocks the human equation is eliminated so far as the timekeeper is concerned in the recording of the time, and his errors of omission and commission are things of the past. Since each man records his own time at the exact moment when he operates the recording apparatus, he can have no complaint against the timekeeper. There is absolutely nothing to be said against such a record.

As a matter of accuracy either of these systems is beyond criticism. The question of availability and practical utility is another matter. The difference between the forms which print the record on strips or discs of paper, and those which print upon the individual cards is much the same as that between the older forms of book records and the newer card systems, in which the flexibility of the card methods is often of much convenience and value. For instance, the records on a strip or disc of paper will not show the employes' numbers in numerical order, but in the order in which the men may arrive, therefore no two sets of records will be arranged alike in this particular. When these records are transferred to a book, as is usually done, this condition makes progress considerably slower than if a numerical order were possible. Other similar objections will readily present themselves.

With cards the case is quite different. Job cards may be sorted so as to bring those of individuals together, and the aggregate time checked against their "day time card," or "pay roll card." Again, they may be sorted by order numbers, and the total charge against each order obtained. And so on, realizing all the advantages of the flexibility of the card method. The card system operates with equal advantage when the record of time is wanted for pay roll purposes only, or when required for obtaining the cost on separate production orders, subproduction orders, classes, parts, or machine operations, as job cards are written and readily used for any of these purposes. For job cards a small bench clock operating as a "time stamp," is frequently used and is a very convenient device for the purpose, as it not only prints the time a job is commenced and completed, but automatically gives the elapsed time.

One of the ordinary styles of job cards used in time recording clocks is shown in Fig. 8. This contains all the data necessary for accurately making up the labor cost on orders. The employe's name and number is on the opposite side of the card, which is otherwise blank. For small jobs this blank portion may be utilized for a material account, so that the single card contains all the data required on a one-man job.

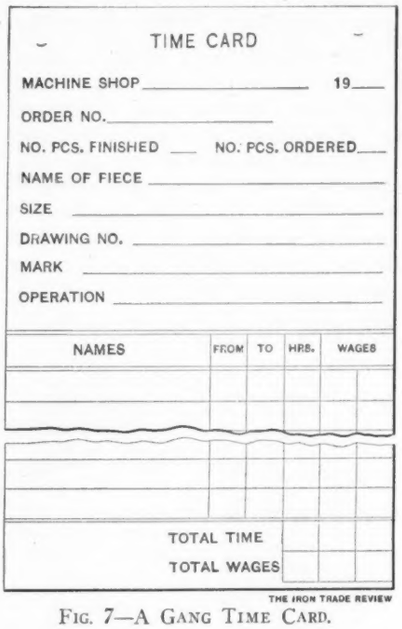

FIG. 7—A GANG TIME CARD.

An improved form of card is shown in Fig. 9. This is arranged as a daytime card or pay roll card, but this or the one shown in Fig. 8, may have the printed blank so arranged as to adapt it for either day time, or job time accounts, the ruling for time re-

cording being the same in either case. It will be noticed that each time a record is made the day of the week, the ordinary division of the day, forenoon or afternoon, as well as the hour and minute is printed. By this means, if the employe carelessly places the

ORDER NO._____
DATE _____
EMPLOYEE NO._____
MACHINE NO._____
ARTICLE _____
OPERATION _____

DAY		IN	OUT	IN	OUT	TOTAL
F	A.M.					
	P.M.					
S	A.M.					
	P.M.					
	P.M.					
W	A.M.					
	P.M.					
T	A.M.					
	P.M.					

TOTAL HOURS,_____ MIN. ____
RATE, _____
AMOUNT,_____

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FIG. 8—AN ORDINARY JOB TIME CARD FOR RECORDING CLOCK.

card in the receptacle with its rear side to the front, the value of the record is not impaired. Another improvement is a device by means of which the act of recording the time by late comers also prints a red block which serves to call the attention of the time clerk to the fact that the employe came in late. This is very convenient in the making up of the time account, particularly if the time clerk is somewhat hurried.

One of the many advantages to the foreman in the use of these job cards is the facilities offered for planning and handling the work of the department. The customary arrangement of the recording clock and the card cases or racks that accompany it, is to place the clock in the center of the available wall space. On the side toward the entrance door and next to the clock is the day time, or pay roll card rack, marked out, and on the opposite side that marked in. Next outside of these are the job card racks, marked "Jobs in Operation," out and in, in the same relation as the day card racks. Still outside of the job rack in is a similar rack marked "Suspended Jobs," and beyond the job rack out is a rack marked "New Work, or Jobs Ahead."

By this method the foreman may make out job cards for work on new orders as they are received, assign them to individual men as he thinks best, and place them in the "New Work, or Jobs Ahead" rack in anticipation of the time when men will complete the jobs they have in hand. When the man finishes the job he has he will "ring out" the card representing it and at once "ring in" the card which he finds with his name and number in the rack. Thus, no time is lost by the foreman in giving the order, and none by the man in hunting up the foreman to ascertain what job he is to take up next. If an order comes to hold up a certain job, or such an action is decided upon by the foreman, he orders the workman to "ring out" his card, place it in the "Suspended Job" rack, "ring in" the next card in the "New Jobs, or Jobs Ahead" rack, and go on with that job without loss of time. This not only saves a considerable portion of the men's time which would otherwise be lost, but adds much to the efficiency of the foreman by permitting him to plan the work of the men at such times during the day as he can best attend to it.

The usual method of making up a

NO._____
NAME _____
TOTAL TIME_____ HOURS RATE _____
TOTAL WAGES $_____
WEEK ENDING _____ 190___

IN	OUT	IN	OUT	IN	OUT	LOST TIME
M. A.M. 6 57	M. P.M. 12 02	M. P.M. 12 58	M. P.M. 6 08			
TU. A.M. 7 01						

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FIG. 9—AN IMPROVED FORM OF TIME CARD FOR USE IN A RECORDING CLOCK.

pay roll for day work, from the records given on the time cards is quite familiar and therefore need not be specially referred to in this article. When day time, and also job time, consisting of piece work, and work done on the premium plan, or the bonus system, are included and must be provided for, the matter becomes more complicated and special provision should be made for it in the pay roll book, or on the pay roll sheet. This may be done by following the columns for the men's numbers and names with columns for each kind or class of service rendered, whether by the day, or on piece work, premium or bonus work. Those for premium or bonus work should be divided so that one column shall show the amount due at the standard rate of pay, and the next the amount to be added as premium or bonus. Then follows a col-

JOB TIME ACCOUNT FOR WEEK ENDING_____ 190__

MAN NO.	NAME	RATE	JOB ORDERS	NUMBERS	TOTAL TIME	TOTAL $	TOTAL ¢
		A					
	TOTAL AMOUNTS						

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FIG. 10—A SIMPLE AND EFFECTIVE ARRANGEMENT FOR RECORDING JOB TIME AND LABOR COST.

umn for the total amount due; then one or more for deductions on account of incidental payments, dues in benefit society and similar debits, after which is the column of net amounts paid. Of course all these columns will not be required on the same pay roll sheet, for the reason that piece work, premium work and bonus work will not all be in operation in the shop at once.

The pay roll need not contain any account of pieces machined, or hours worked, except the latter in cases of all straight day work basis. These matters are accounted for by the time cards, the job book, etc. The pay roll should be concerned only with the identity of the man, the amount due him, and the amount paid.

While the job time cards form a full and accurate account of all production work done on the production and sub-production orders in the plant, it is advisable to have these summarized for convenient reference, and to show at the end of each week the aggregate labor cost of each. This is accomplished by means of entries made daily in a job time book, which is shown in Fig. 10. This book was designed in accordance with the wishes of a manager who desired to know the condition of the work day by day, and on a certain day of each week the amounts expended for labor on each production order in the works. These were handled as principal production orders, but a similar plan would as readily record the expenses on sub-production orders, covering the making and assembling of groups of parts, individual parts, or even machine operations. A greater number of books, or larger ones would be all that would be required. The loose leaf system would be very convenient in this work as it would greatly reduce the weight of the book and so increase the convenience of handling it.

The question with which this book is principally concerned, is not so much what work has been done on the current orders today or yesterday, but what has been the total labor cost on each of these orders to date. The work in this shop was all day work. Each man recorded a day time card for pay roll purposes, and a job time card for each order upon which he was engaged. If he ran more than one machine, and on different orders, he would be given a job time card for each order, and his whole time would be recorded on each card, after which the foreman would note on the cards the proper allotment of time to each order, these several allotments aggregating the elapsed time, and consequently agreeing with the day time card.

The numbers, names and hourly rates are written on the left hand page and the account is carried across both pages, the vertical dotted line showing the center fold of the book. If a large number of orders are in the shop a much larger book may be used, or several pages may be necessary. This is continued from day to day until changes in the working force render a new list necessary. Thus, while some names may be dropped and others added to the roll, a new list of names will not have to be written for a month or more. When several pages are used the names, numbers and rates are written on the first left hand page and the following pages cut off on the vertical line A, A, so as not to cover the names, etc., making it necessary to write this matter but once. The current order numbers are written at the heads of the columns under the title of "Job Order Numbers."

The time found on the job cards is entered opposite the man's name, and under the proper order number, the one or more pages necessary for the list of men being used for each day's work. Totals are carried out on both horizontal and vertical lines, and one set checking against the other attests their correctness.

On a specified day in each week a weekly report is made upon a similarly ruled sheet, which shows in a comprehensive form the week's work of each man, and the time expended on each order. The handling and accounting, in the manner described, of the cards representing the work of 125 men was satisfactorily performed at a cost for clerk hire of $12 per week, which would seem an economical sum considering the value of the data obtained.

THE ELECTRICAL EQUIPMENT OF THE CARGO FLEET IRON CO'S. WORKS

The use of electric motors is becoming more and more general in industrial operations, but nowhere are they being introduced more rapidly than in the iron and steel industries. The electric motor is peculiarly adapted for use in shops where the general conditions are such as those met in iron and steel works, these conditions being the all-pervading presence of coal and other dust, work of a rough and heavy nature, and unskilled labor.

One of the best examples of the large part played by electricity in modern iron and steel manufacture, is that afforded by the combined iron and steel works of the Cargo Fleet Iron Co., at Cargo Fleet, Middlesborough, England.

For several years this company had been employed in the manufacture of pig iron only, until 1905, when a most complete remodeling of the old plant and installation of a new plant was effected, in order to enable the firm to convert the whole of its output of pig iron into structural steel. This transformation was most satisfactorily accomplished, and several hundred tons of steel are now being made every week, electricity playing a very large part in its production. Blast furnace gas, steam, hydraulic, coke-oven and producer gas power are also largely used.

The whole equipment of the works is of the most up-to-date and complete nature, advantage being taken of the latest improvements in this class of machinery existing in the principal steel manufacturing countries, notably in Germany and America, the steel and iron making plant having been supplied principally by these two countries. The combination of blast furnace and steel plant on one site is probably the first in Great Britain, and has so far proved to be entirely satisfactory.

The works lie in the heart of a large industrial district, providing a market right at hand. The works are also advantageously situated as regards transport facilities, being in direct connection with the North Eastern railway. In addition also to the railway facilities, the works have an extensive frontage on the mouth of the Tees and at present have a wharf 300 feet long, at which products can be loaded into sea-going vessels.

Supplies of the principal raw materials are obtained from within a

radius of 20 miles, iron ore and limestone being obtained from property owned and worked by the company. The iron ore mines are at Liverton, and the limestone quarry is at Mickleton. The supply of iron ore, it is estimated, will last for 90 years at the present rate of consumption, i. e., 7,000 tons per week.

Electrical Equipment.

The electrical equipment of the works is exceedingly comprehensive and includes generating plant, of an aggregate capacity of 3,300 kilowatts and a large number of motors, aggregating over 4,000 horsepower, the large majority of which were supplied by the British Westinghouse Co.

The power house contains a variety of prime movers, these consisting of one vertical compound steam engine, one British Westinghouse and one Richardsons Westgarth steam turbine, two Premier gas engines operating on coke-oven gas, and two gas engines using blast-furnace gas. The generators consist, respectively, of one 350-kilowatt, two 750-kilowatt, two 300-kilowatt and two 375-kilowatt, 220-volt, direct-current machines. The power house is spanned by a 40-ton Broadbents traveling crane fitted with four Westinghouse series wound motors.

Coal Supply.

Coal is brought into the works on railway trucks, and these are drawn by an electric haulage gear driven by a 100-horsepower motor up an incline to a gantry running along the back of the furnaces, from which trucks can run on inclines to all parts of the works. The coal trucks pass from the top of this gantry to the screening and washing plants, and from the latter to the disintegrators. From the disintegrators the powdered coal is conveyed to the coke-oven coal stores by a Robins belt conveyor. These coal stores are situated in the center of two rows of Koppers coke ovens, each row containing 50 ovens. Below the coal stores is a space for receiving a Baroper coal dust compressor, into which a certain quantity of powdered coal is run from the stores above, and compressed into a block the same size as the inside of a coke oven. The block of compresed coal dust is next carried along the front of the ovens on a pair of rails and pushed into one of the ovens by a charging apparatus running on the same pair of rails. On receiving the coal, the doors of the oven are put on and sealed up with fire clay preparatory to the burning process. The washing, disintegrating, conveyor, compressing and charging plant are all worked electrically, the coal washing plant using motors, one of 140 horsepower and another of 10 horsepower, the washing water pump being driven by an 80-horsepower motor. The disintegrator is operated by a 50-horsepower, and the belt conveyor by a 25-horsepower motor. Each compressor box, of which there are three, is driven by a 35-horsepower Westinghouse railway type motor, the two charging boxes being also operated by motors of the same size.

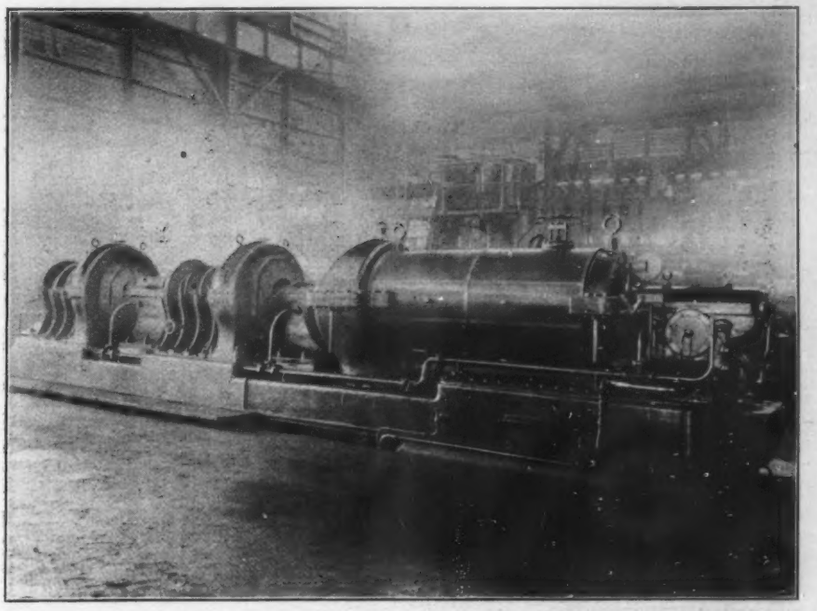


FIG. 1—WESTINGHOUSE 220-VOLT, 750-KILOWATT STEAM TURBO-GENERATOR. CARGO FLEET IRON CO.

Coke Plant.

The coal remains in the Kopper ovens for 30 hours or more, and is there burned to coke by its own gas. This method is a great advance on the old method of coke making in beehive ovens as carried on in Great Britain until a few years ago and which has now been almost entirely superseded on the continent, but which is still largely used in Great

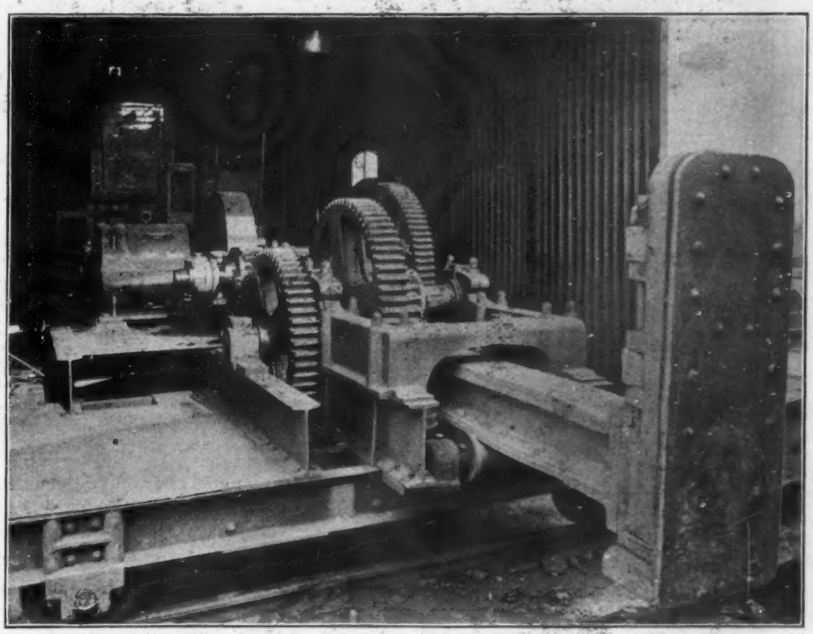


FIG. 2—WESTINGHOUSE RAILWAY TYPE MOTOR DRIVING COKE OVEN RAM. CARGO FLEET IRON CO.

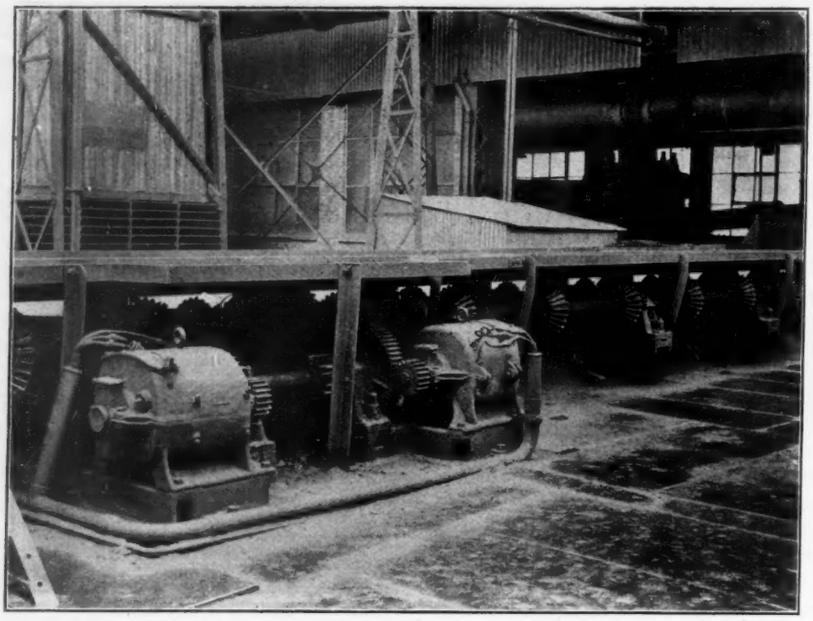


FIG. 3—RAILWAY TYPE MOTORS DRIVING LIVE-ROLLER GEAR AT BLOOMING MILL. CARGO FLEET IRON CO.

Britain. The system at Cargo Fleet is by means of air-tight ovens or retorts, these yielding a far greater output of coke than the old beehive type, and in addition enabling many valuable chemical by-products and the gas produced during the coking operation to be saved. At the end of the burning period, the coke is pushed out at the back of the oven by an electric ram and is there cooled and broken up into convenient sizes, and afterwards taken away from the bench by electrically operated coke cars, either to the blast furnace or to the stock bins, as may be required. These coke cars, of which there are four, are each operated by a 35-horsepower Westinghouse railway type motor, which controls all the movements of a car. The Kopper ovens give an increased output of 10 per cent in excess of the old beehive method, and effect a saving by the use of the gas and the sale of by-products of something like £20,000 per annum. The gas is almost identical with city gas, and the by-products, such as tar, sulphate of ammonia, etc., are extracted from it in the usual way, some of the purified gas, as previously mentioned, being used in the coking process, the rest being led to a gas holder for supplying two of the gas engines in the power house, and for various other purposes as hereafter described.

Blast Furnaces.

The manufacture of pig iron is car-

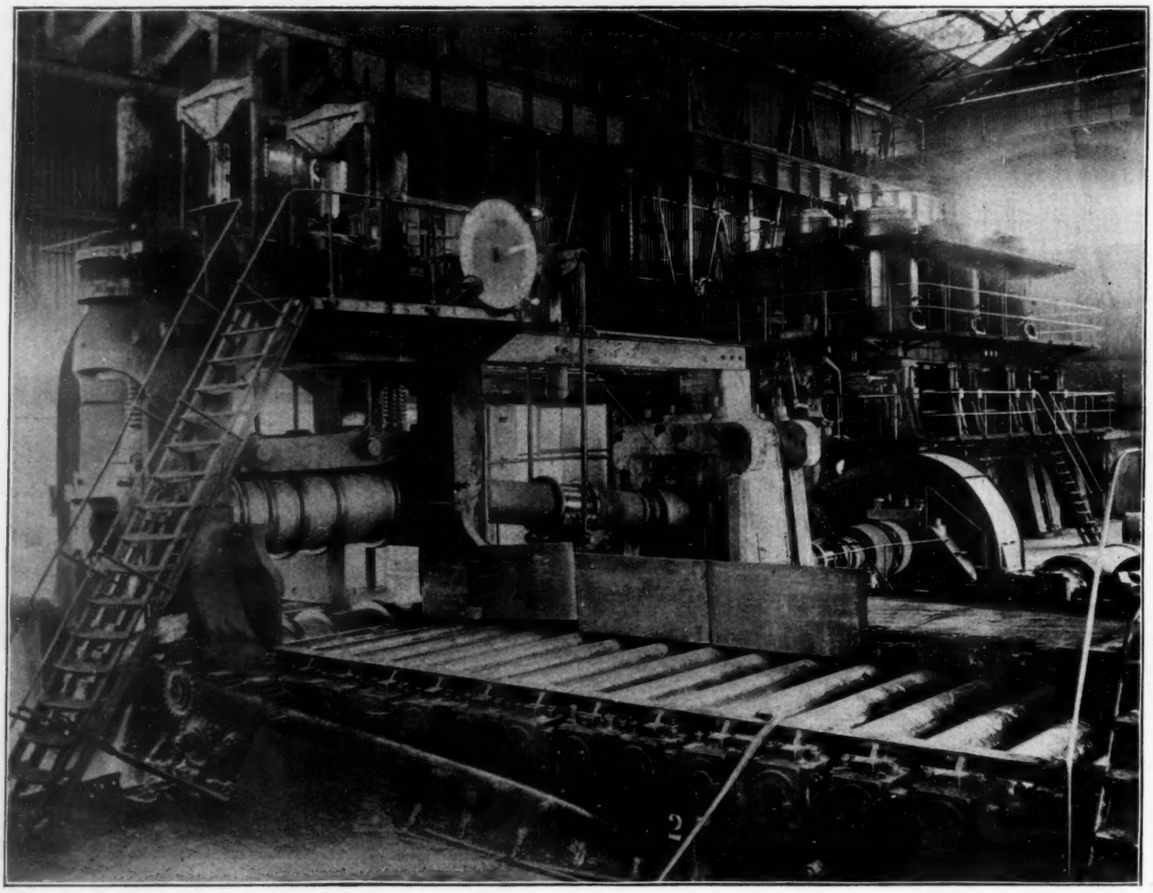


FIG. 4—BLOOMING MILL, WITH LIVE ROLLER GEAR DRIVEN BY WESTINGHOUSE 55-HORSEPOWER RAILWAY TYPE MOTORS. CARGO FLEET IRON CO.

ried on in two blast furnaces, located at about the center of the site. These are supplied with calcined ore, limestone and coke from two large bins, close at hand, which discharge into the skip of the "Brownhoist" charging equipment by means of endless belts, the various materials being automatically weighed during the passage from the bin to the blast furnace. The calcined iron and limestone are delivered to these bins by means of the gantry previously mentioned. The whole process of charging the furnaces is done mechanically, no men being situated at the top of the furnaces. The original blast furnace plant consisted of five furnaces, each 75 feet high, and with a bosh diameter of 24 feet, and blown by five blowing engines, the blast being heated in 12 Cowper stoves. These furnaces have been replaced by the present pair, each of which is 90 feet high, with an 11½-foot hearth, and 21-foot bosh, designed for a maximum output of 1,400 tons per week.

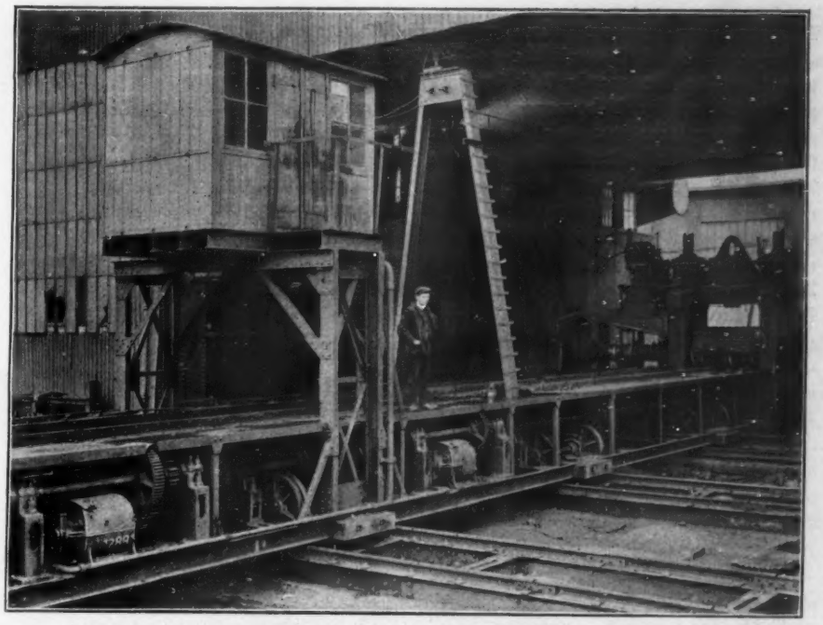


FIG. 7—TRANSFER TABLE AND ELECTRICAL SCREW-DOWN AT FINISHING MILL, DRIVEN BY WESTINGHOUSE MOTORS. CARGO FLEET IRON CO.

The blowing engines are a notable feature of the blast furnace plant and consist of seven Cockerill gas engines, of Messrs. Richardsons Westgarth & Co.'s manufacture. Cooling water for the pistons and cylinder jackets of these gas engines is supplied from a tank which is in its turn supplied from a Morrison cooling tower, the water being pumped from the engines to the tower by means of two Gwynnes centrifugal pumps, each driven by a

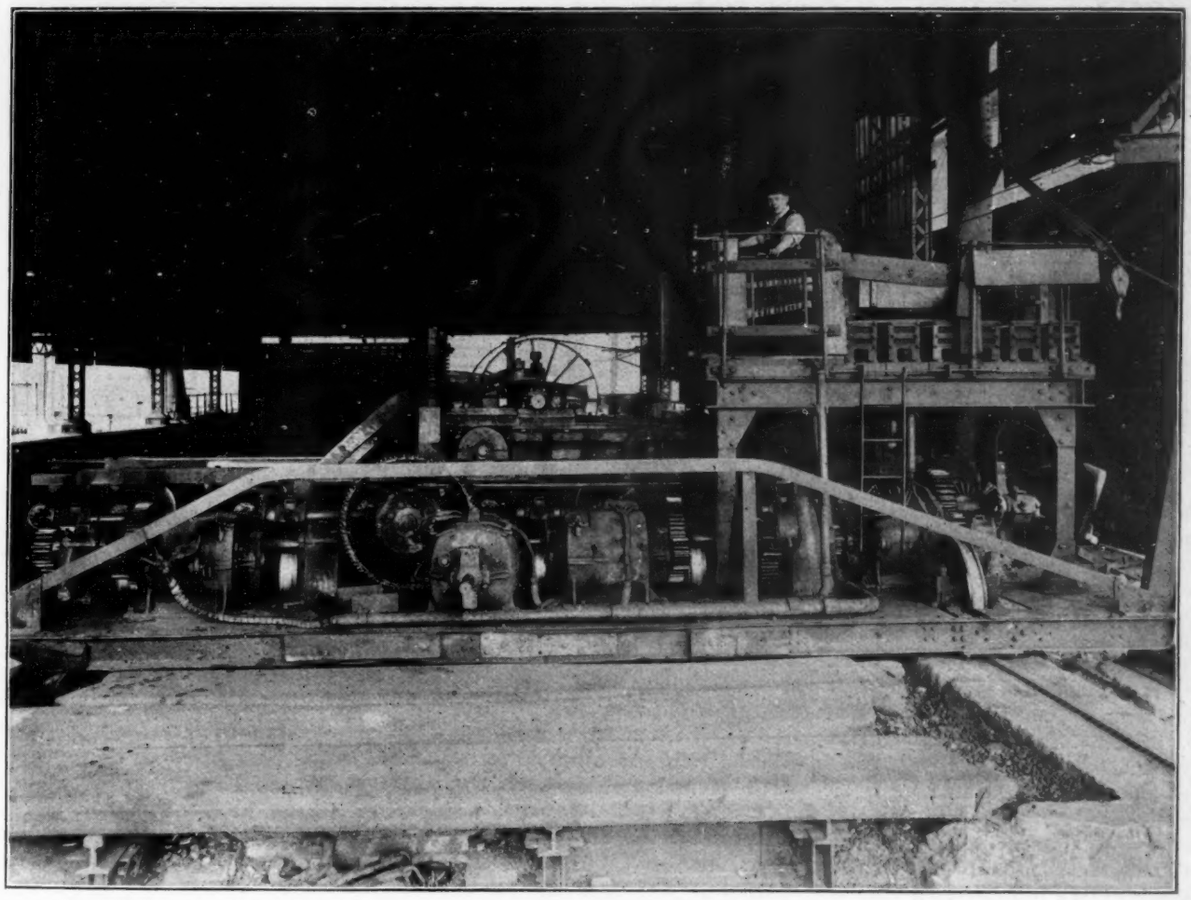


FIG. 5—COLLIN'S CHARGING MACHINE DRIVEN BY FOUR 20-HORSEPOWER AND ONE 10-HORSEPOWER RAILWAY TYPE MOTORS. CARGO FLEET IRON CO.

70-horsepower motor; the cooling water is pumped through the cooling tower and to the supply tank by four pumps, driven by 32-horsepower compound wound motors; each engine is fitted with an electrically worked "barring" arrangement operated in each case by a 10-horsepower series wound motor. The engine house is spanned by an electrically operated 20-ton three-motor crane built by Booth Bros., of Rodley.

The gas from the blast furnaces when the latter are in full blast amounts to about 63,000 cubic feet per minute, and is used partly in the blowing gas engines, and partly in the Cowper stoves for heating the blast, being, however, thoroughly cleaned before being used. This latter operation is accomplished by means of ingenious arrangements of the piping, and by gas washers, the washing plant consisting of three Theisen washers, each of which is operated by a 150-horsepower motor. Two of these washers are capable of dealing with all the gas from both the furnaces, the third being installed as a stand-by. The gas goes into the washers at a temperature of from 300 degrees to 400 degres Fahr., and with 2 to 4 grammes of dust per cubic meter, and comes out at a temperature of 70 degrees with only 0.016 to 0.02 grammes per cubic meter. It is then suitable for the gas engines. This is believed to be the first instance in the history of iron making in which all the blast furnace gas has been freed from dust before being used.

Steel Plant.

The Talbot continuous process is used for steel making, the plant being the largest of this type yet erected in Great Britain.

The actual process at the Cargo Fleet Iron Works is as follows:

The iron from the blast furnace is run into 20 and 25-ton hot metal ladles carried on standard gage trucks, which are then hauled by steam locomotives to the steel plant. On arriving close to the two metal mixers, each of which is of 150 tons capacity and fired by means of gas from the coke ovens, the metal is poured into the mixer. On the charging side of the plant are two 40-ton cranes, each fitted with six Westinghouse motors. From the mixers the metal is carried in a 20-ton ladle by means of one of the aforesaid cranes to the Talbot open-hearth furnaces where it is converted into steel. There are three of these furnaces, each of 175 tons capacity and supplied by Messrs. Richardsons Westgarth. On the pouring side of these furnaces there are two 75-ton cranes, each equipped with Westinghouse motors; these cranes carry the ladles to the ingot molds, and pour the metal into molds of from 3 to 5 tons capacity. The ingots after being cast are taken on special cars hauled by steam locomotives to the stripping house, where the molds are stripped off and the ingots put direct into the soaking pit until required in the rolling mill. The slag from the steel furnaces is run out at the back into slag cars, and is taken away to a special basic slag plant, which has been put down in order to crush the slag for agricultural purposes. The gas for firing the steel furnaces is made in 10 Talbot producers.

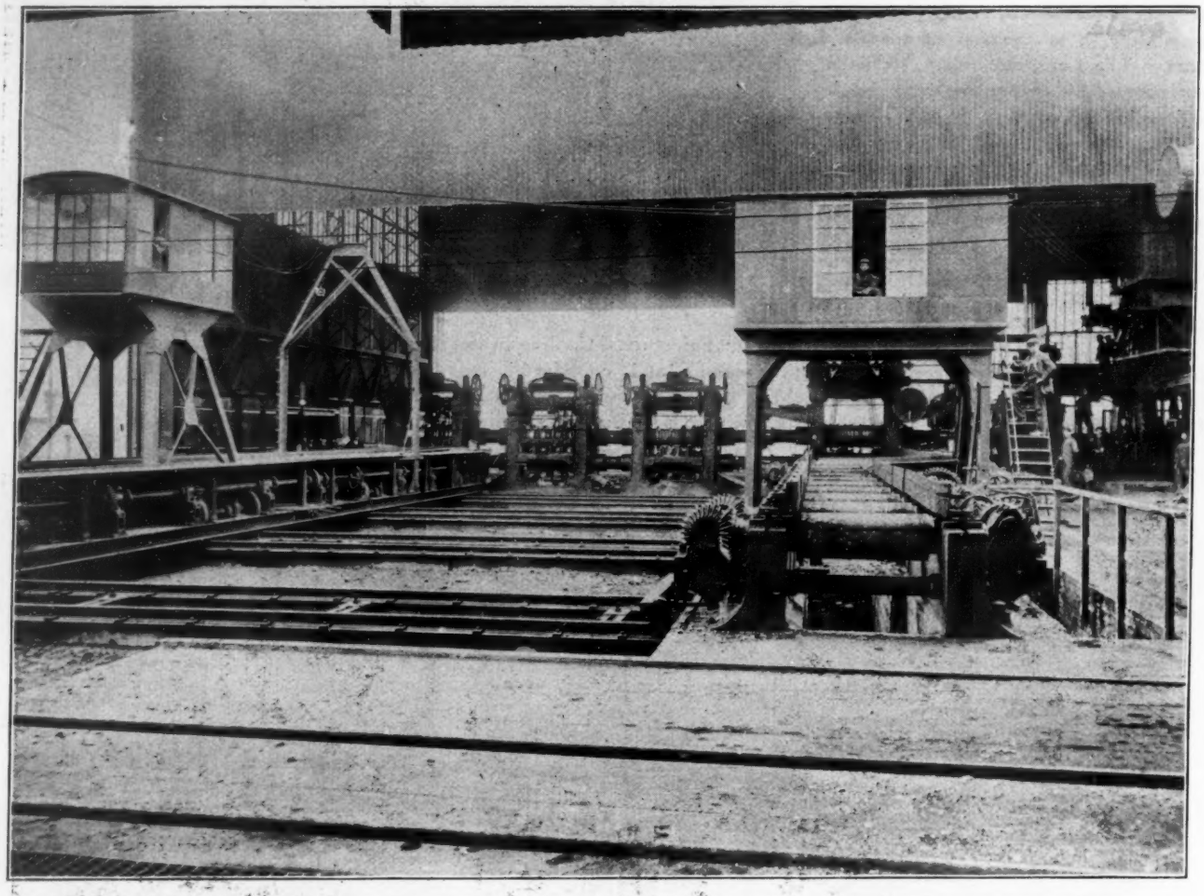


FIG. 6—FINISHING MILL WITH 20-HORSEPOWER RAILWAY TYPE MOTORS DRIVING LIVE ROLLER GEAR. CARGO FLEET IRON CO.

Structural Mill.

The next process in the manufacture of the structural steel is that of blooming. This is done by a blooming mill having 40-inch centers and 8-foot 6-inch rolls and driven by an

18,000-horsepower, three-cylinder vertical compound condensing engine built by Richardsons Westgarth. The soaking pits are gas fired, surplus gas from the Talbot furnaces being used for this purpose, and are spanned by a 15-ton Broadbent crane and a mast crane of the Stuckenholtz type, the former being equipped with four Westinghouse motors. From the soaking pits, the reheated ingots are lifted by a 15-ton crane and placed on a mechanical chair for conveyance to the blooming mill. After being rolled down to the required size, the ingots are fed by further live roller gear to the bloom shears, where they are cut up into the required lengths. The live roller gear at the back and front of the mill is operated by four Westinghouse railway type motors of 55 horsepower capacity each, to each set of rolls, the only people required in the mill being a man and two boys for the control of the live roller gear, and one man for the blooming mill engine. From the bloom shears the blooms are transferred to the Collins charger by a shear transfer table and are taken by means of the Collins charger, operated by four 20-horsepower and one 10-horsepower Westinghouse motors, into either a gas fired heating furnace, where they are reheated preparatory to the finishing rolling process, or direct to the mill as the case may be. The blooming mill is spanned by a 40-ton crane, operated by three Westinghouse motors for the changing of rolls and other operations connected with the blooming plant. From the reheating furnaces the blooms go to the finishing mill. This mill consists of four sets of rolls driven by a steam engine of the same size and type as that driving the blooming mill. The reheated bloom is placed on a live roller table and carried to the first pair of rolls and passed in succession through the four pairs of rolls by means of traveling tables on both sides. From the last pair the piece is carried forward by means of an extended roller rack to the hot saw or shears as may be desired. The hot saw is driven by a 100-horsepower shunt wound Westinghouse motor. The live roller gear is also electrically operated by means of 20-horsepower tramway type motors, these also being of Westinghouse make. The finishing mill is equipped with 60-ton electrically operated crane, with main and auxiliary hoists. Under this crane are also the roll turning shop and the roll stores, so that when changes of rolls and repairs are necessary, they can be easily carried out with the aid of this crane. Beyond the finishing mill is a hot bed for cooling purposes, measuring 100 feet by 52 feet. From this bed the finished sections are fed by live roller gear through the straightening machines to the shears, where they are cut into convenient and standard lengths. The hot bank is operated by eight Westinghouse motors, each of 20 horsepower capacity; four of these are on the live rolls and four on the skid gear. The angle and beam straightening machines are all electrically driven. The beam or girder straightening machine is for straightening beams and girders up to 24 x 76 inches, the live roller gear on either side being operated by a 20-horsepower motor. The head stock for straightening different sizes of beams is run in or out by means of a 5-horsepower motor. The hot bank and straightening gear are spanned by two 10-ton gantry cranes, each equipped with three Westinghouse crane type motors. The rail bank is equipped with two double-sided and one single-sided straightener built by Messrs. Craig & Donald, and are each electrically driven, in the case of the first machine with a 20-horsepower motor and in the case of the single-sided machine with one 15-horsepower motor, each machine being self-contained. In addition there are three ending machines and five drilling machines, all motor driven.

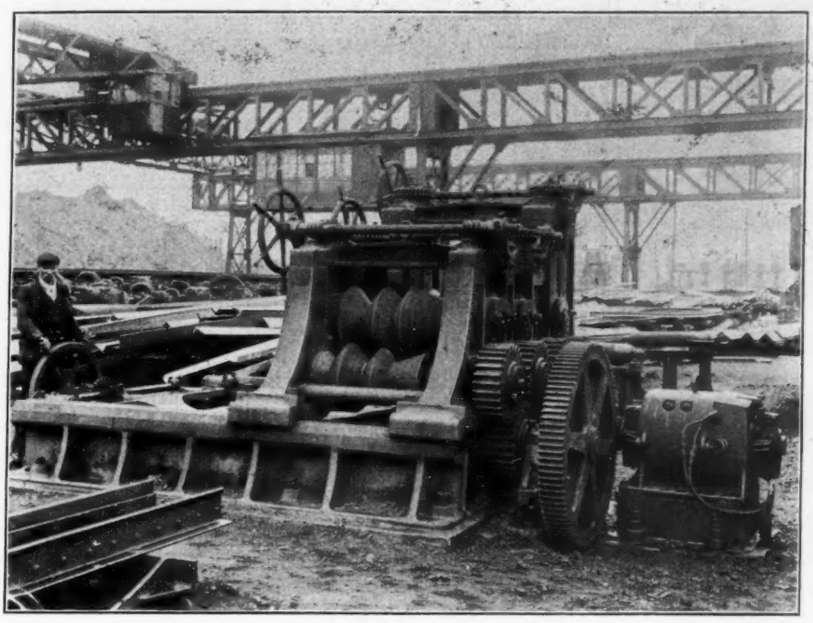
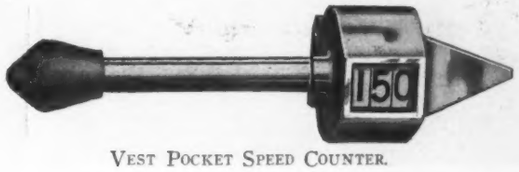


FIG. 8—WESTINGHOUSE 55-HORSEPOWER RAILWAY TYPE MOTOR DRIVING ANGLE-STRAIGHTENING MACHINE. CARGO FLEET IRON CO.

The water for use throughout the works is obtained from the town, and a considerable quantity from the Tees, the water being pumped from the latter by means of two Mather and Platt motor-driven turbine pumps.

A VEST POCKET SHAFT SPEED COUNTER.

The accompanying illustration shows a vest pocket shaft speed counter placed on the market by the American Steam Gage & Valve Mfg. Co., 208 Camden street, Boston. The device illustrated is accurate and durable, and is shown full size in the illustration. While small, it is of substantial construction. It registers the exact number of revolutions, it only being necessary to take the initial reading and subtract from it the final reading to obtain the number of revolutions in a given time. It reads either to the right or left. To take the reading, dirt or oil is removed from the center of the shaft by the arrow point, which is then used as a handle for holding it, while the rubber point is applied to the center of the shaft.



VEST POCKET SPEED COUNTER.

A GISHOLT BIG BORE LATHE IN RAILROAD WORK.

The economical production of various parts usually turned out in railroad repair shops has been a troublesome problem because of the comparatively few pieces that are run through at one time. Repair shop methods are necessarily slow because it does not pay to rig up specially for the various jobs, and therefore the wider the range of a machine tool, and the greater the ease with which it may be adapted to various classes of work, the more valuable it is in repair shops.

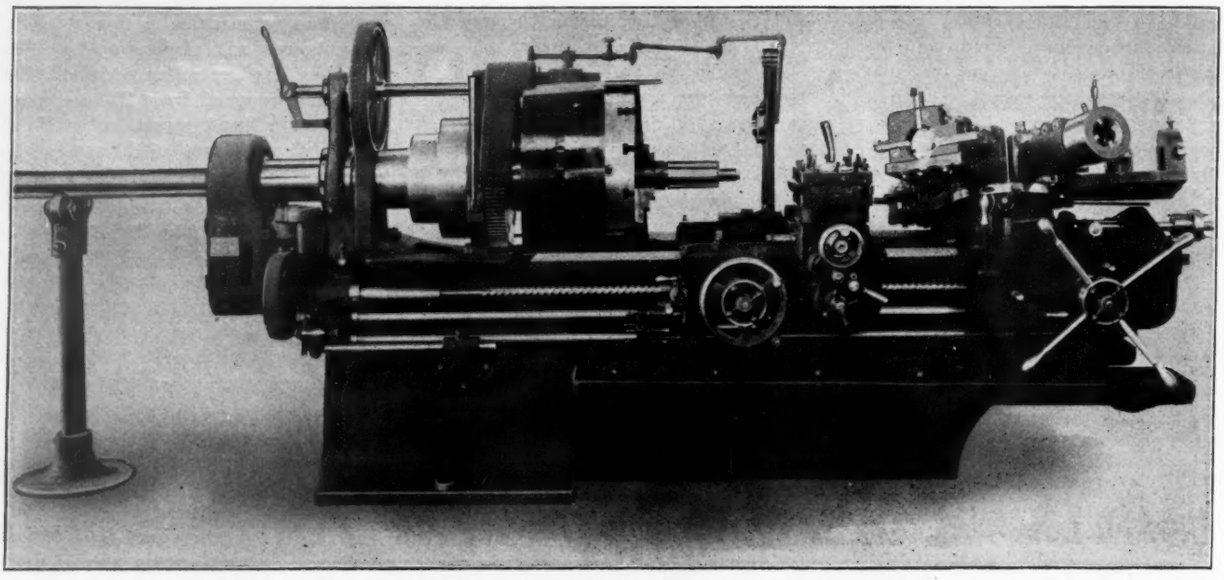


FIG. 1—THE GISHOLT BIG BORE LATHE.

Knowing of this condition in general with relation to work in railroad shops, the Gisholt Machine Co., Madison, Wis., commenced a number of years ago, to study these problems with relation to the work specifically adapted to the Gisholt lathe. The matter of chucked work was a comparatively simply problem to solve. To adapt the Gisholt lathe to bar work and make tools that would have a large range and still be easily changed from one piece to another, was a more difficult problem. It seemed desirable to have a machine which would be a combination bar and chucking lathe for the work in railroad shops so that it could be kept going all of the time. If it so happened that there should not be a sufficient amount of bar work on hand to keep the machine busy it would merely require a change of tools to produce chucked work. Following this idea a machine has been brought out that has been especially popular with railroad shops, as it is adapted to such work as liners, brasses, pistons, piston centers, front and back cylinder heads, piston followers, bull rings, eccentrics and strap rings, cross heads, pipe flanges, steam chest covers, and also work off the bar such as crosshead pins, valve motion pins, brake hanger pins, etc. As compared with other methods work of these two general classes may be finished in lots of as few as 6 or 8 of a kind at a time with a result in saving of from 50 to 80 per cent and upwards. Naturally the bringing out of this machine has caused a considerable revision of production methods in many of the railroad shops.

These machines are known as the Gisholt big bore lathes, owing to the increased spindle capacity, and the most popular size is the 24-inch lathe which is built with a spindle hole of either 5-inch or 6¼-inch diameter. A 28-inch machine is also built with a 7½-inch hole through the spindle for especially large work.

Owing to the fact that the various pins above mentioned may be made

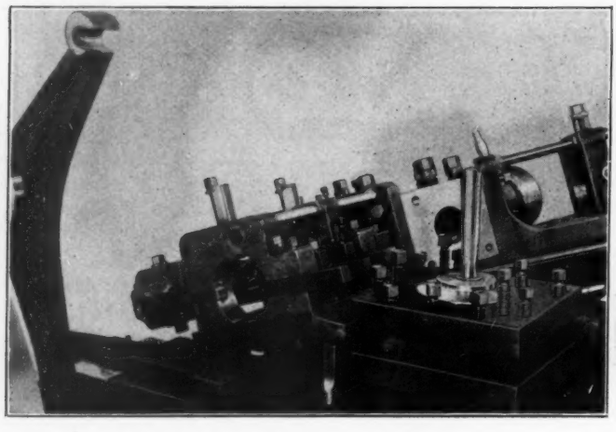


FIG. 2—CUTTER HEAD FOR ROUGHING.

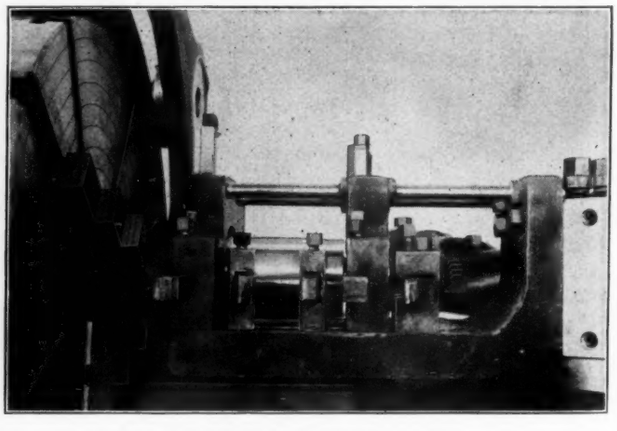


FIG. 3—CUTTER HEAD IN OPERATION.

from bar stock the expense of forgings from which these pins have been formerly made is done away with. In addition to this, because of the manner in which the work is chucked, there is no time lost in centering as with the older methods. In some of the shops such parts as knuckles and cross head pins are finished complete except the tapered surfaces which are left large and as wanted are finished to size as required. To give a general idea of the method of finishing work from the bar a description follows of finishing a cross head pin on the Gisholt big bore lathe with 5-inch spindle hole.

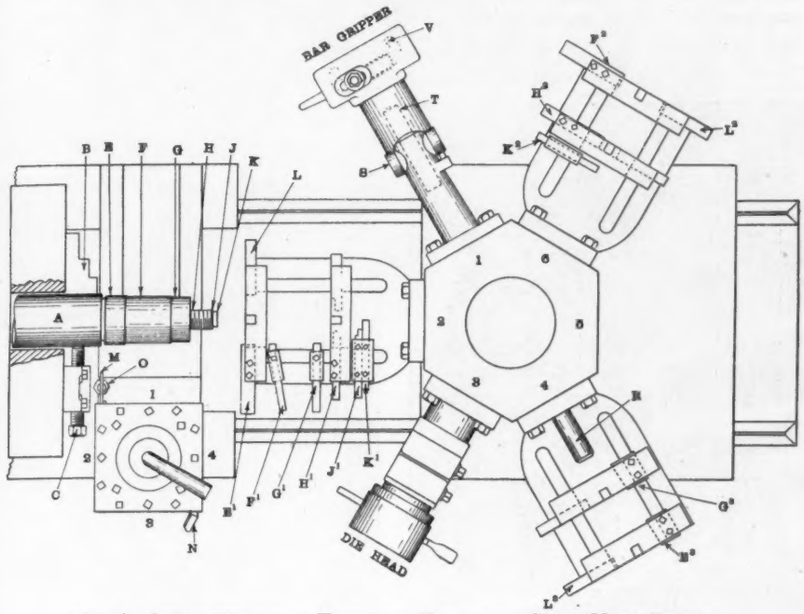


FIG. 4—ARRANGEMENT OF TOOLS FOR FINISHING CROSS HEAD PINS.

The piece of bar stock is shown at A and is held in the three-jaw scroll chuck by hard chuck jaws at B and also by three chuck blocks at C.

The first operation consists in removing the major portion of the stock and bringing the pin approximately to size. This roughing operation is completed by the cutters shown in the box tool attached to face 2 of the main turret, the cutters E_1, F_1, G_1, H_1, J_1 and K_1, removing the stock on the surfaces indicated by the corresponding letters on the piece itself. Just before starting this roughing head the tool post tool N is used for truing up the end of the bar.

The piece thus being brought approximately to size, the next operation consists in bringing surfaces F and H to exact size. This is done with the cutters F_2 and H_2 in box tool on face 6 of the main turret. Cutter K_2 faces the end K of the piece and at the same time gages the length of the pin; L_2 acts as a back rest for supporting.

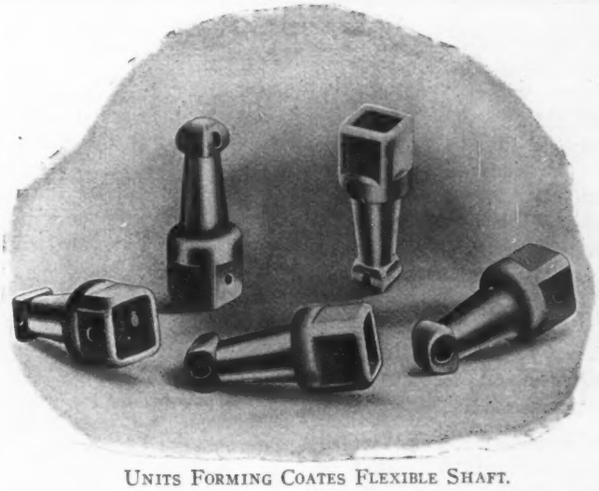
Next the box tool on face 4 of the main turret is swung into position and the cutters G_3 and E_3 bring the surfaces E and G to the correct size and taper; the arbor R is arranged as a gage to determine the proper location of the tapered surfaces, thus insuring duplicate work when cutters E_3 and G_2 are once properly set; L_3 is a back rest.

All surfaces in the pin having thus been brought to size, the next operation consists in cutting the thread, which is done with the die head on face 3 of the main turret. This completes the piece and the tool post cutting off tool M supported by post O is then used for cutting off.

After the piece has been cut off the jaws and blocks are loosened and the bar gripper shown on face 1 of the main turret is swung into position. This bar gripper consists of a pair of self-acting jaws shown at V for gripping the piece and drawing it out, and an arbor at T for pushing the piece back to the desired length. The operation is as follows: Through the rapid traversing device the bar gripper is brought rapidly to the piece and through the jaws V grips the stock firmly; then by operating the turret rapid traversing device the bar is drawn out to approximately the proper length. The jaws V are then released and the forward half of the bar gripper is swung upwards at right angles on the hinge S, thus exposing the arbor T which is used to push the piece back to proper length for the next pin.

A ONE-PART UNIT FLEXIBLE SHAFT.

A unit link flexible shaft in which there is only one part to the unit has been placed on the market by the Coates Clipper Mfg. Co., Worcester, Mass., and is now being manufactured in sizes from one-tenth to five horsepower. The first flexible shaft made by this company, some 20 years ago, had 12 parts to a unit, making it very complicated to manufacture and rendering it necessary for the purchaser to carry a large number of replacement parts. For these reasons there has been a constant aim to reduce the number of parts to the unit, and the present shaft marks the accomplishment of that effort.



UNITS FORMING COATES FLEXIBLE SHAFT.

In this new shaft, on one end of the unit there is a squared spheroid which fits into a squared socket in the other end of the next unit and does the driving. A soft steel pin is used to hold the units together but there is absolutely no strain on this

pin, as the drive comes directly on the squared portion of the squared spheroid. Each unit is made of hardened steel and any tearing strain on an extended socket is entirely eliminated. Between the squared spheroid and the squared socket on each unit there is a round shoulder which serves as a bearing, the result being that absolutely nothing comes in contact with the outside cover except a round shoulder, thus eliminating the possibility of heating and admitting of a high rate of speed.

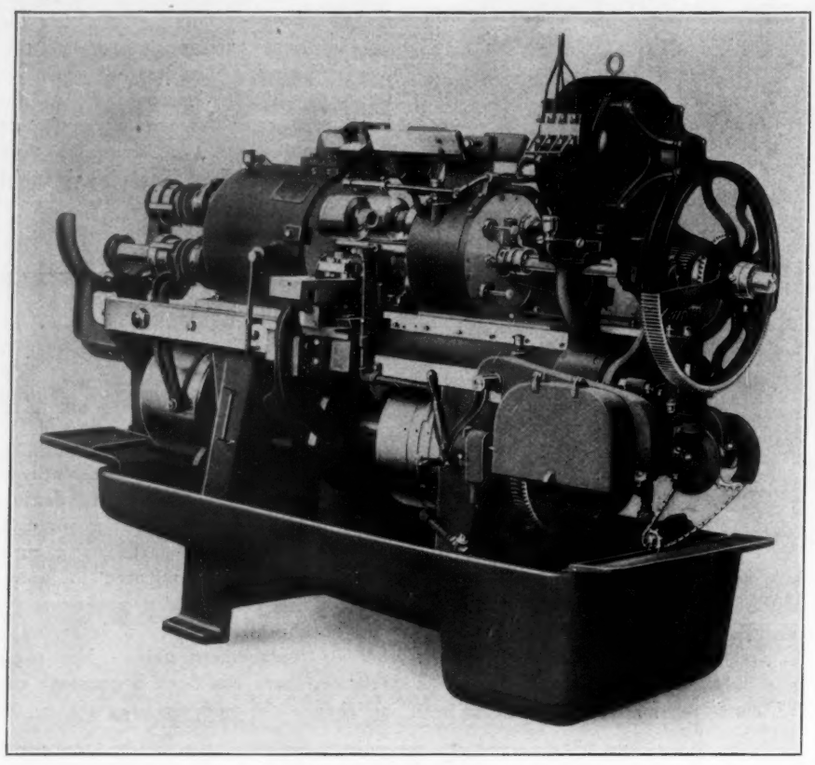


FIG. 1—ACME AUTOMATIC MULTIPLE SPINDLE MOTOR-DRIVEN SCREW MACHINE.

Owing to the construction of the shaft hitherto, it has been necessary to run at a high rate of speed in order to secure its full efficiency. In the construction of this latest unit, however, the factor of safety is so great in its transmission power that a full efficiency of the shaft may be obtained at a low rate of speed.

About 20 manufacturers of woodworking machinery held a meeting at the Belmont in New York on Thursday, May 21. There was general discussion of conditions in the trade and a comparison of prices, wages and discounts was made with a view to acquainting each other with the conditions prevailing in the different centers. The conference was highly satisfactory and beneficial to the participants.

ACME AUTOMATIC MULTIPLE SPINDLE MOTOR-DRIVEN SCREW MACHINE.

The accompanying illustrations show the No. 56 Acme automatic multiple spindle screw machine, built by the National Acme Mfg. Co., Cleveland, as equipped with motor drive. This machine has been recently improved to provide for a single belt drive, which may be readily converted into a motor drive by substituting the gear H for the pulley and placing the motor platform and the motor on the machine, as shown in Fig. 2. The advantages afforded by the single drive and the relative changes are as follows: The relation between the cam shaft and the spindle drive is always positive, eliminating accidents to tools due to belt slippage; belting, and its resultant troubles, are reduced to a minimum on the single belt drive and entirely eliminated on the motor drive; the countershaft is simplified or eliminated; the output of the machine is increased, due to the positive control of the change of speed for the tools, which allows the maximum use of the fast speed; it is possible to move tools intermittently by power when setting up or testing; the time necessary for changing the speed of the cam shaft is considerably less, on account of the more convenient location of the change gears; the oil pump is driven at a constant speed and when the spindle shaft is started first floods the work with oil before the tools commence operating; control of hand and power movements of the cam shaft mechanism, as well as the flow of oil, is brought within easy reach of the operator while he is in a position to observe the action of the tools.

The system of gearing shown is so designed that it is practically noiseless. Referring to Fig. 2, the relation of the various portions of the gearing to each other may be clearly traced out. The driving shaft is driven by the gear H mounted directly on it, and the main spindle back gears are located at A. The speed changes are effected by means of the clutch B, which is operated automatically and also by means of the hand lever E. When it is desired to operate the cam shaft mechanism by hand, it is done by means of the crank D, which operates the main spindle through the chain drive and train of spur and bevel gears leading to the main spindle. Change gears for feed changes are located at F and the oil pump is driven by means of the sprocket and chain at C. In case of accident, or when stoppage for any cause is necessary, the lever E may be used to immediately release the cam shaft mechanism. This lever also comes into play when it is desired to move the tools intermittently when setting up or testing. The free wheel G renders cranking by hand a light operation, inasmuch as it cuts out the entire transmission mechanism.

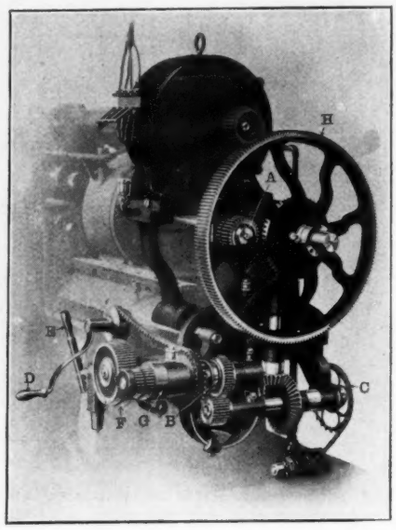


FIG. 2—ARRANGEMENT OF GEARING ON ACME MOTOR-DRIVEN SCREW MACHINE.

The capacity of this machine is 2¼ inches and the size of motor required

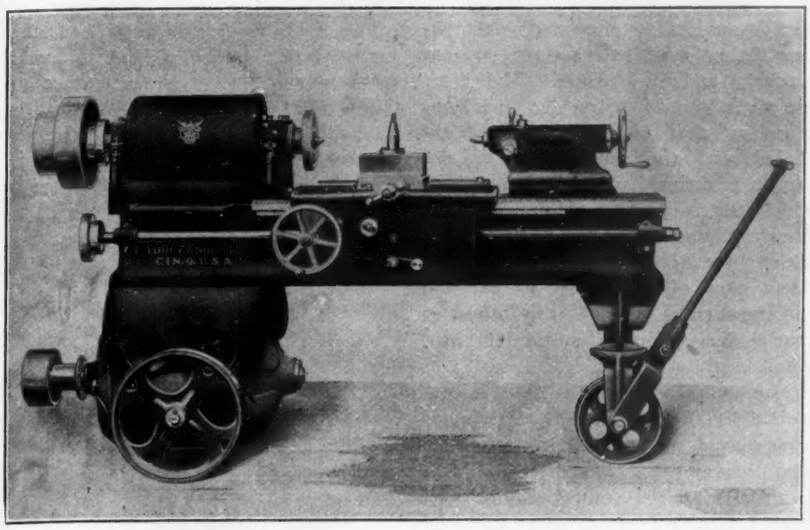


FIG. 1—LODGE & SHIPLEY PORTABLE LATHE.

varies from three to five horsepower, depending upon the class of work for which the machine is to be used. Any standard motor can be used without alteration. This machine is to be exhibited at the Railway Master Mechanics and Master Car Builders' convention at Atlantic City, June 17-24.

TWO NEW LODGE & SHIPLEY TOOLS.

We present herewith illustrations of two new machines developed and placed on the market by the Lodge & Shipley Machine Tool Co., Cincinnati. These are known as the 16-inch portable lathe and the chucking lathe and are shown in Figs. 1, 2 and 3, respectively.

The portable lathe shown in Fig. 1 is designed primarily for use in fitting frame bolts and turning up studs, etc., in locomotive repair shops or for doing the various odd jobs which come up from time to time on the assembling floor of shops manufacturing a heavy class of machinery. Heretofore it has been necessary to carry these parts to be fitted from the erecting floor to some distant point in the lathe department.

As it will be noted from the illustration, the lathe is mounted upon three wheels and on a fairly level floor may be pulled about by one man. It is driven by a 2½-horsepower constant speed motor, fully enclosed. This is suspended from the lathe bed under the headstock and is belted to a two-step cone pulley mounted upon the back gear shaft. As the range of work is narrow and for the sake of simplicity, but two speed changes have been provided. The lathe has power longitudinal feed and a plain rest. If desired, it can be fitted with a taper attachment. The idea in mind in its design has been to do this class of work with the greatest rapidity possible. If desired, it may be furnished with legs instead of wheels.

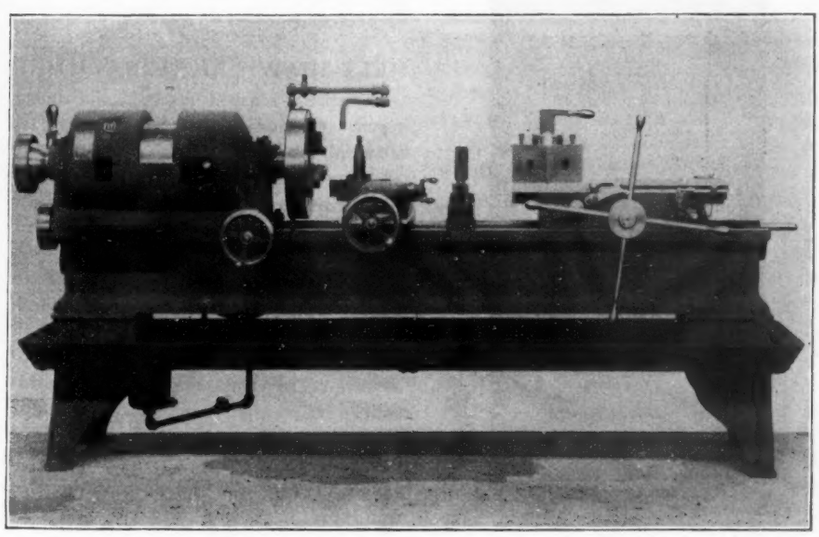


FIG. 2—LODGE & SHIPLEY PLAIN CHUCKING LATHE.

Chucking Lathe.

Fig. 2 shows the chucking lathe, which is made in all sizes from 14 to 48 inches and furnished with the equipment shown in Fig. 3, if desired. The machine is fitted with a turret carriage and a carriage carrying a compound rest. The arrangement of the guide rest is the simplest and the most positive that could be devised and it may be brought into position instantly without being in the way of either the turret tools, the work or the chuck. The arrangement of the compound rest is such that it will do square facing, a limited amount of turning and is also available for angles, if desired. The turret is provided with a feed movement which gives instantaneous changes of feeds, ranging from 0.006 to ⅛-inch feed per revolution of spindle.

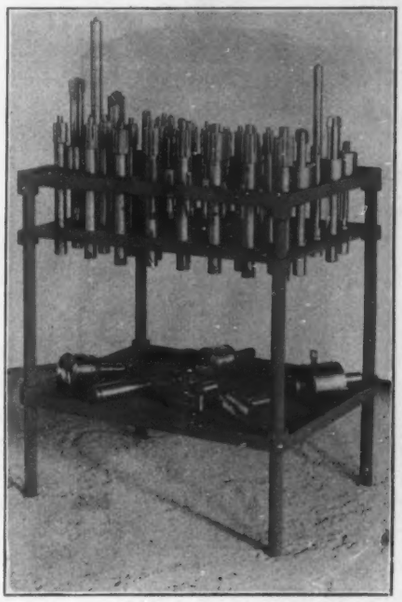


FIG. 3—TOOL EQUIPMENT FOR CHUCKING LATHE.

The machine has been in use in the shops of the maker for some time and has been found to be one with great possibilities for time and labor saving, and is available at all times for almost all kinds of boring and will do the work in from one-fourth to one-tenth of the time ordinarily required in the tool room for such work. Its capacity is such that it can conveniently do the boring for as many as six engine lathes, which makes it available for a manufacturing proposition in the lathe department of a shop.

ALLEN-BRADLEY ELECTRIC CONTROLLER.

Under the name, the Allen-Bradley controller, the American Electric Fuse Co., Muskegon, Mich., is building a controller especially adapted for crane service. The claim of superiority for this controller is based very largely upon the nature of the resistance medium and the advantages attendant thereupon. The familiar phenomenon of high electric resistance due to the imperfect contact of carbon elements in a circuit is utilized and the resistance members of the controller consist of columns of carbon discs, usually 100 in number, each disc measuring about 1 inch in diameter and ⅛-inch in thickness. The front and rear views of a 30-horsepower controller are shown indicating the placement and number of these carbon columns.

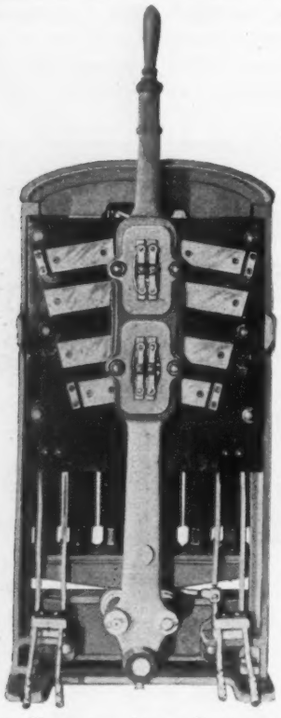


FIG. 1—FRONT OF ALLEN-BRADLEY CONTROLLER.

These carbon discs are piled one upon the other in an iron tube from which they are insulated and an electrical connection made at top and bottom. As the discs stand naturally in the tube under no other pressure than their own weight they offer a maximum of resistance, which in the size used in these controllers is 110 ohms. When the greatest pressure is brought to bear on them the resistance is cut down to 1 ohm. The discs have flat polished faces to provide intimate contact under pressure and also to avoid the possibility of carbon dust. Each disc is subject to a strength test before being used to assure against cracking under pressure. The discs are tightly packed in the insulated tubes so that air is practically excluded and the combustion of the carbon is claimed to be nil. The heat which the resistance generates in the discs while never as great as that in which the carbon is produced is taken care of by means of external radiation rings on the iron tubes so that a large cooling surface is provided.

The compression of the discs is controlled by the movement of the operating lever and is in proportion to that movement. As shown in the front view of the controller, the lever is in a neutral position when centered. Movement to the right starts the motor and movement to the left reverses. The adjustment of the pressure to the position of the lever is such that the pressure changes from zero to maximum as the lever moves from the center to the end of the contact plates. An equalizing device is arranged to distribute the pressure evenly to each carbon column, and the contact plates being single units rather than a series of separate contacts permit of an absolutely continuous increase of current through the motor and a consequent delicacy of control impossible where resistance is cut out by jumps.

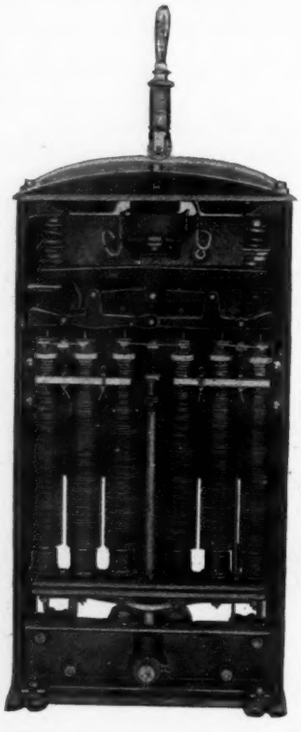


FIG. 2—BACK OF ALLEN-BRADLEY CONTROLLER.

The continuous character of the contact plates is also claimed to avoid sparking and the consequent wear of the brushes and contacts. With this arrangement the only possible points at which the spark could be induced are at the entering and leaving contacts of the lever. At the former point the current is a minimum and at the latter point there remains in the controller circuit only one ohm of resistance, so that the change of current is very small. The contact plates are formed of heavy bus copper.

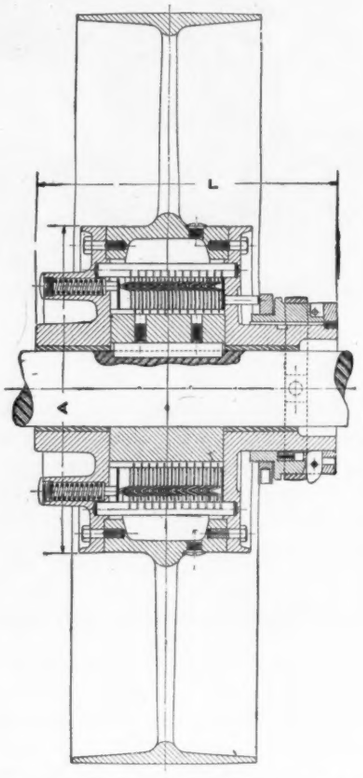


FIG. 1—HELE-SHAW CLUTCH PULLEY.

HELE-SHAW FRICTION CLUTCH.

In the illustrations accompanying views are shown of the Hele-Shaw friction clutch manufactured by the Merchant & Evans Co., Philadelphia. This clutch departs from the simple flat disc type of friction and has for its distinguishing feature a 35-degree "V" shaped circumferential groove in which the discs engage and in which the special merit of this type of clutch is claimed to lie. The general construction of the clutch is not unusual and consists of a number of friction discs enclosed in an oil-tight drum, the contact and engagement of the discs for the transmission of motion being controlled by the ordinary appliances for throwing pressure on

and off. One advantage claimed as the result of this friction groove is an increase of friction surface for the same diameter of disc with a ratio of superiority over the flat plate of 3.1 for the same diameter disc, both in the matter of pressure applied or power transmitted. It is also claimed that with a complete engagement of the discs there still remains a clearance between the plates of about ⅛ inch which permits of the very free circulation of the oil in which the discs are immersed and brings the oil into close contact with the friction surfaces and thus establishes a maximum radiation of the heat generated. In addition the grooved form of the plate gives it greater strength to resist buckling whatever might be the cause. For these reasons this clutch is offered as particularly fitted for continuous and heavy duty and for application to machine tool work as well as automobile or other service. Speed diagrams for this clutch show a very uniform picking up under load and the curve is practically a straight line.

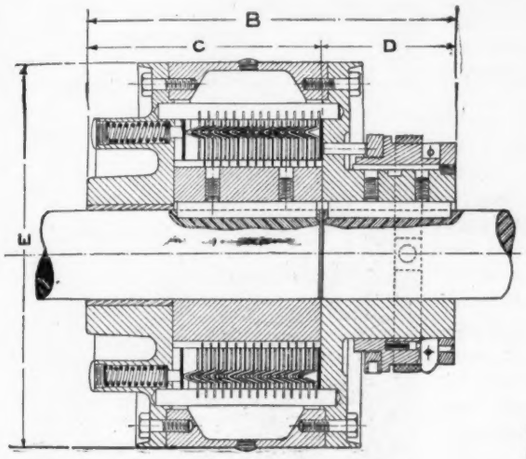


FIG. 2—HELE-SHAW CLUTCH COUPLING.

The inner discs of the clutch are made of mild steel and the outer discs of phosphor-bronze. Various driving problems require different solutions, however, and in some instances the toothed plates also are of steel with intermediate slipper plates of bronze. The toothed plates are so constructed to engage with the driving and driven drums.

The American Manganese Bronze Co., Philadelphia, has bought from the Holmesburg Trust Co. a one-acre plot, at Rhawn and Hegerman streets, for $2,000, and will erect there a foundry building to cost $20,000.

A SPUR GEAR HOBBING MACHINE.

The system of cutting spur gears by the use of a hob possesses advantages in many cases over the method of milling one tooth at a time. The rapidity of the operation exceeds that of any system of milling or planing gears and a continuous cut from start to finish up to the full capacity or strength of the hob teeth is obtained. To provide a tool for work where these advantages are desirable the Adams Co., Dubuque, Ia., has placed on the market the Farwell automatic gear hobbing machine. This tool is built to generate the gear teeth in theoretically correct form and produces teeth of a uniform thickness and shape. Its first cost is small and by equipping it with a full set of change gears and a full set of hobs it is complete for all sizes and pitches of gears up to its capacity of 12 inches diameter and 6 inches face. This capacity will cover nearly all of the requirements for automobile transmission gears, lathe, boring mill, milling machine and other tool change gears, drill press and other back gears.

It requires one hob for each pitch desired. One hob of the desired pitch will cut gears with any number of teeth up to the full 12-inch swing of the machine table. The same hob will also cut worm gear wheels. The spindle is driven by a 4-inch belt on a 15-inch pulley from a swinging cone pulley shaft and the drive belt is kept taut in all positions of the spindle head by a distance rod provided with a turnbuckle for adjusting. Three hob speeds are obtained by the three step cone pulleys for 2½-inch belt on the swinging shaft and countershaft. The countershaft is provided regularly with one 4 x 10-inch friction clutch pulley. Two pulleys may be provided where more spindle speeds are desirable, but as the hobs do not vary greatly in diameter three spindle speeds are deemed sufficient to take care of the requirements.

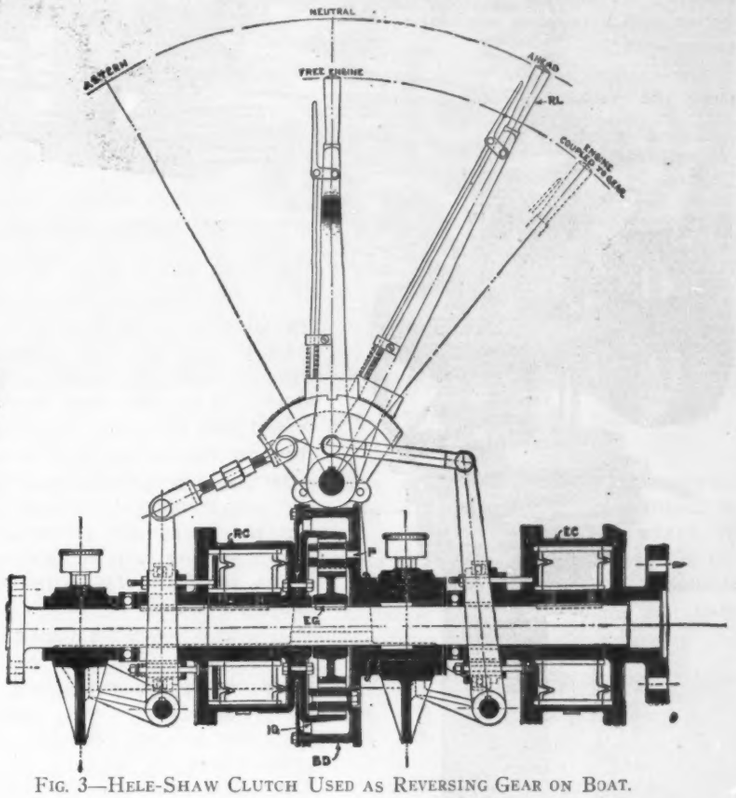


FIG. 3—HELE-SHAW CLUTCH USED AS REVERSING GEAR ON BOAT.

The spindle head is swivelled upon the saddle so that the hob may be set at the proper angle for cutting spur gears with different pitches or for cutting worm gears. This saddle is gibbed to the slide on the column for providing vertical feed. The hobs for cutting spur gears are regularly right hand, single thread, 3 inches diameter, 3 inches long, with a 1¼-inch arbor hole and ¼-inch keyway. Other sizes, of course, may be used. The hob may be moved lengthwise so the entire length of hob can be used before requiring sharpening.

The table revolves upon a wide angular surface that gives the table great rigidity.

The table is revolved at the proper speed (varying according to the number of teeth in the gears to be cut), by means of one pair of bevel gears at the spindle head, one worm gear at the table and one pair of spur gears connected to the bevel gears by a universal jointed rod. The small number of joints and the fact that all gears and shafts are large, insures a steady positive drive of the table in unison with the cutter, which is very essential for accurate work.

The vertical feed is by means of a pawl and ratchet operated through a

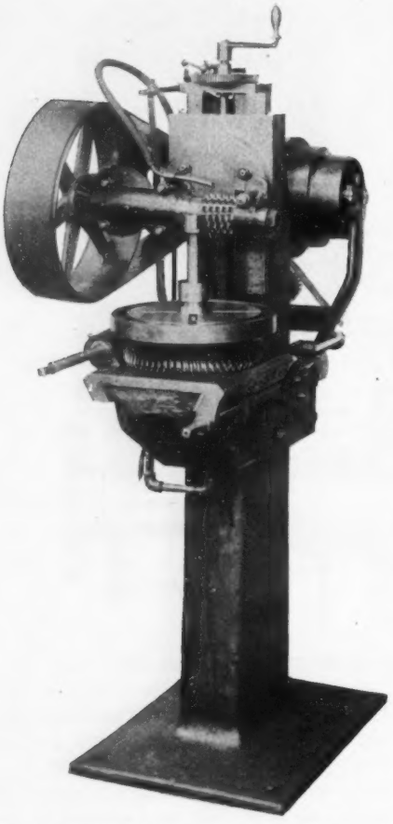


FIG. 1—FRONT VIEW OF GEAR HOBBING MACHINE BUILT BY ADAMS CO., SHOWING SPINDLE ON WHICH PIECES ARE MOUNTED, AND THE CUTTER.

reducing gear by an eccentric on the worm shaft. The feed may be changed without stopping the machine by shifting the button on the bell crank at the top of the machine. A trip automatically stops this feed when the hob has finished the gear. No attention is required from the operator other than putting on blanks and taking off finished gears. One operator may run several machines or attend this gear cutter while operating other tools.

A rigid stop is provided, against which the table saddle may be run, to give the proper depth of the teeth. Instead of setting this stop by micrometer graduations which require much care in setting, a hardened steel gage is provided which is of a thick-

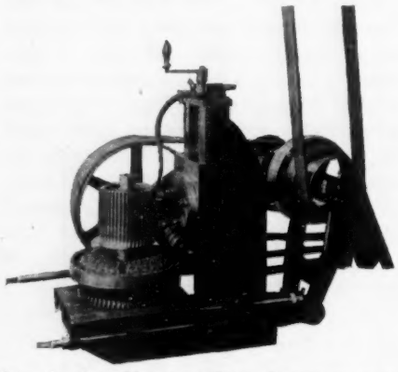


FIG. 2—SIDE VIEW OF TOOL, SHOWING THE MILLING OPERATION ON FIVE BLANKS.

ness equal to the depth of the teeth of the pitch desired. To set the stop, the table is advanced until the blank contacts with the hob. The stop is then screwed up against the gage block. When the gage block is removed and the table is advanced to the stop, the correct depth is obtained. After the stop is set for a given diameter, any number of gears of the same size can be cut the proper depth by simply moving table to this rigid stop.

The spindle is 1¾ inches diameter and has a bearing 6¾ inches in length. Provision is made for taking up wear and end play. The arbor has an outboard bearing 1¾ inches long and 1⅝ inches diameter. These supports for the cutter hob are rigid and overhang only enough to swing a 3-inch hob. The saddle bearing is 8½ inches long upon the housing and is heavily gibbed thereon. The swivel head is 8½ inches diameter, is secured to the saddle by three T head bolts, and is counterbalanced by weights in the column.

The table is supported and revolves on a cone surface 9½ inches diameter at its outer edge and is 2½ inches wide. In addition to this there is a center hob bearing 3½ inches in diameter extending through the saddle with an adjusting ring nut below. The table saddle is 12½ inches long and is heavily gibbed to the knee which is 8 inches wide. The feed screws for the head and for the table are both ⅞-inch diameter with square thread. The stop screw is ¾ inch diameter and has hardened steel contact points in the screw end and in the saddle. The countershaft furnished has 10-inch pressed steel hangers, 1 7/16-inch shaft, 4 x 10-inch clutch pulley and three step cone for 2½-inch belts, and is intended to run at 130 revolutions per minute.

THE NEW LE BLOND UNIVERSAL TOOL AND CUTTER GRINDER.

The accompanying illustrations show a new universal tool and cutter grinder recently placed on the market by the R. K. LeBlond Machine Tool Co., Cincinnati. It is adapted to grinding all kinds of cylindrical, internal face and angular work, also face mills, end mills, reamers, counterbores, circular saws, snap gages, gear cutters, rose reamers, flat surfaces and all other kinds of tool room work.

In the general principle of design it is analogous to a universal milling machine, inasmuch as it consists essentially of a column, a knee, saddle, swivel carriage and table. This construction not only gives great rigidity but is well adapted for taking the largest inserted tooth cutters now greatly used in modern milling practice. Combined with the above advantages is

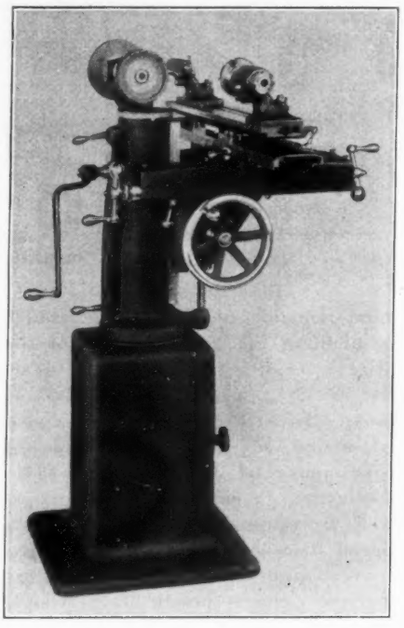


FIG. 1—THE LEBLOND UNIVERSAL GRINDER.

the absence of all stems, posts, split bearings and other joints.

The operating levers are so disposed as to be convenient to the operator in any position in which he may be in relation to the machine. This feature admits of close observation of the action of the graduating wheel on the work and permits the operator to place himself in a position to give his work close observation and still have all adjustments conveniently at hand. The arrangement of levers is clearly shown by the illustration Fig. 1, and in a measure by the drawing Fig. 6.

It will be noted from Fig. 6 that the cross feed and quick traverse lever

for the table extend through the machine and have a crank at both ends respectively, and can be adjusted to suit the position of the operator. All adjustments are provided with a fine feed by means of a hand wheel at the front of the machine.

Fixed clamping handles provide for locking any or all parts in any position.

All cylindrical and flat bearings are thoroughly lubricated and protected.

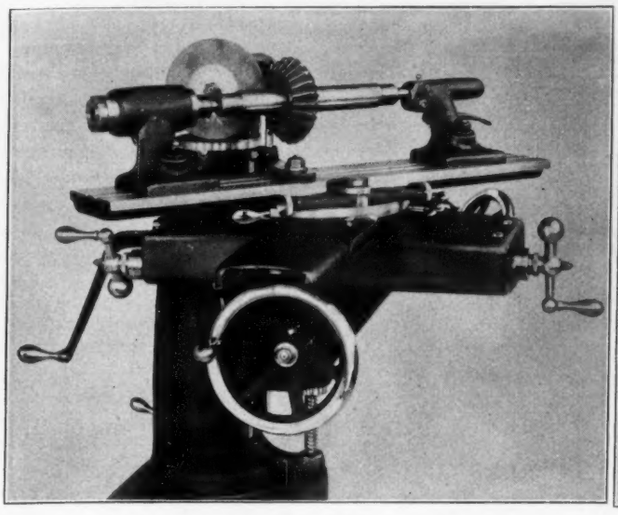


FIG. 2—GRINDING A DOUBLE ANGLE CUTTER.

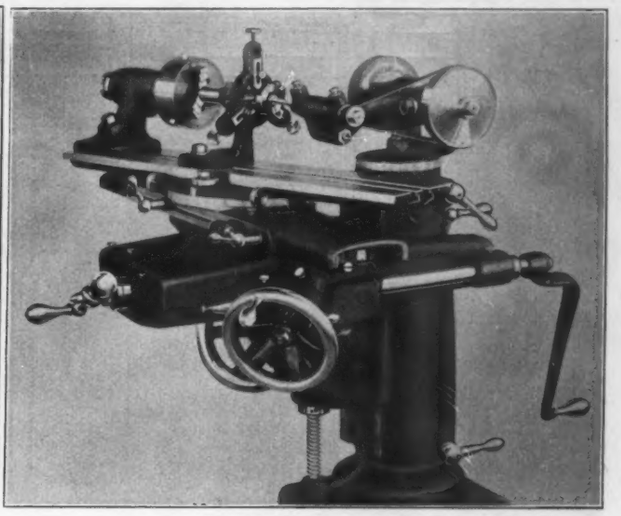


FIG. 3—GRINDING A TAPER HOLE IN AN ARBOR.

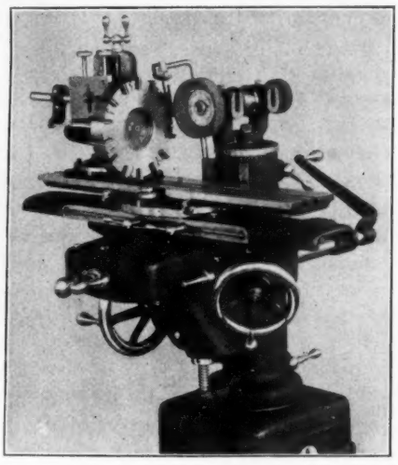


FIG. 4—GRINDING AN INSERTED TOOTH MILLING CUTTER.

The oil holes have dust proof covers and the bearings are lubricated by means of felt pads. The spindle bearings are provided with dust proof collars. Covers are attached to the saddle and table bearings which thus are never exposed. The knee bearing on the column is provided with felt wipers.

The knee is of box section and swivels on a supplementary sleeve on the column through an arc of 360 degrees. It has a vertical adjustment of 8¼ inches below the center of the wheel spindle. This permits the grinding of formed cutters, hobs, reamers, etc., on their radial faces without the use of drop centers. The saddle has an apron cast completely around it, which forms a cover for the knee as well as the cross feed screw at all times. It has a cross movement of 6½ inches, being operated by the handle shown in the front of the machine. The table has a working surface of 5½ x 28¾ inches and a longitudinal movement of 17 inches. It swivels through an arc of 90 degrees on either side of the center and is provided with a fine screw adjustment throughout this range for setting accurately to any taper. The base is graduated and is clamped rigidly with two clamping bolts in any position. A quick traverse is obtained by means of a lever operaitng a pinion meshing with a rack on the bottom of the table. This is shown projecting alongside the inclined hand wheel in the illustration, Fig. 1.

The head and foot centers have a swing of 18 inches and take work 18 inches long between centers. The headstock spindle is tapering and revolves in a removable sleeve which can be clamped in the V block of the universal attachment. The front end is threaded to receive a chuck. The foot stock has a spring center actuated by a thumb screw lever, and which can be removed when it is desired to insert a special center for grinding reamers.

The wheel spindle has tapering boxes and is driven through a single pulley by a 2-inch belt. Three spindle speeds are provided, namely, 3,175 4,200 and 6,365 revolutions per minute. These are all obtained by the countershaft and permit the correct surface speed for various size wheels. One end is bored for the LeBlond S. A. collet and enables the wheels to be removed and replaced without the necessity of truing up. The spindle is eccentric with the column and with the cross movement the minimum and maximum diameter that can be taken is greatly increased. A complete set of stop and tooth rests is provided for all classes of work.

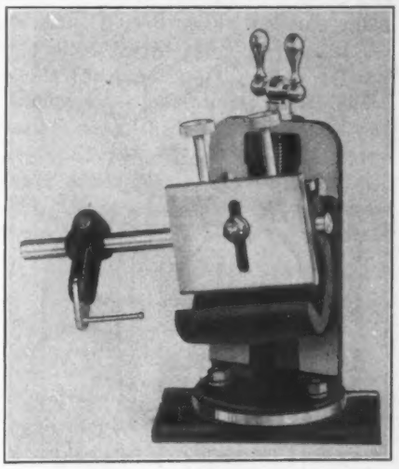


FIG. 5—UNIVERSAL ATTACHMENT.

In connection with the machine a universal attachment, mentioned above, is furnished, being shown in Fig. 5, and also in Fig. 7. The head swivels upon the base and the V block can be swiveled completely through an angle of 360 degrees in a vertical

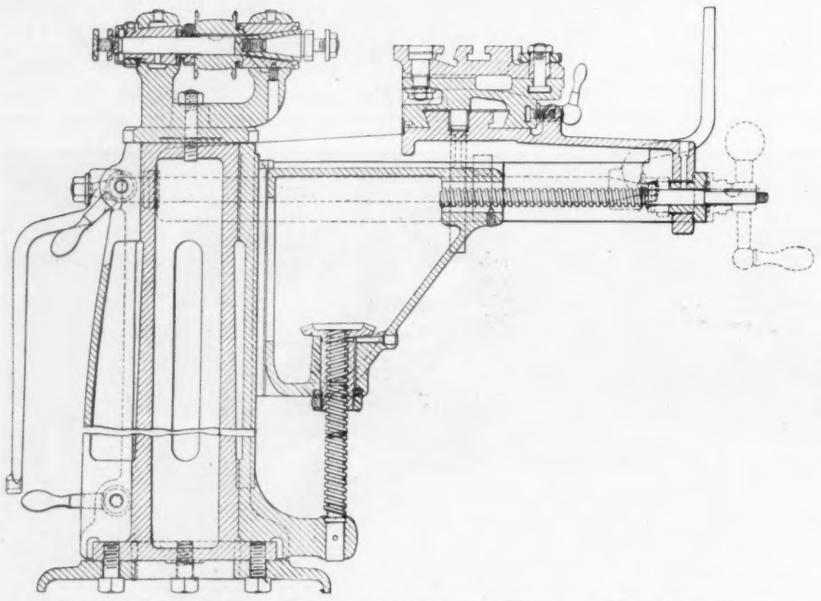


FIG. 6—CROSS SECTION THROUGH SADDLE AND TABLE OF LEBLOND GRINDER.

plane. This attachment will hold work mounted directly upon arbors with either straight or tapered shanks. The headstock sleeve and spindle can be clamped in the V block and can be used for grinding work held in the chuck, such as cones, cups, collars, etc.

The work is clamped by an adjustable jaw which may be delicately adjusted by two thumb screws at either end. A floating center is attached to an adjustable bar projecting from the upper portion of the V block casting and can be set for any length and taper of work. The head has a vertical adjustment by means of two slots through the main casting and will take work of 2 inches diameter and when in the highest position will swing 8¼ inches over the table and 11½ inches over the saddle.

In addition to the universal attachment a gear cutter grinding attachment is furnished, which is designed to grind the teeth of all gear cutters radially. If ground otherwise the shape of the tooth cut by them will not be correct. This attachment is shown in Fig. 8, which also illustrates the universal vise. On the universal cutter grinding attachment a spring pawl can be adjusted to bring the radial face of the tooth against the gage which swings over the cutter and is then clamped in position. The gage can then be swung back clear of the cutter. The table is provided with stops to regulate the depth of the cut. The attachment will take in cutters up to 6 inches in diameter and two bushings are furnished for cutters with ⅞, 1 1/6 and 1¼-inch holes.

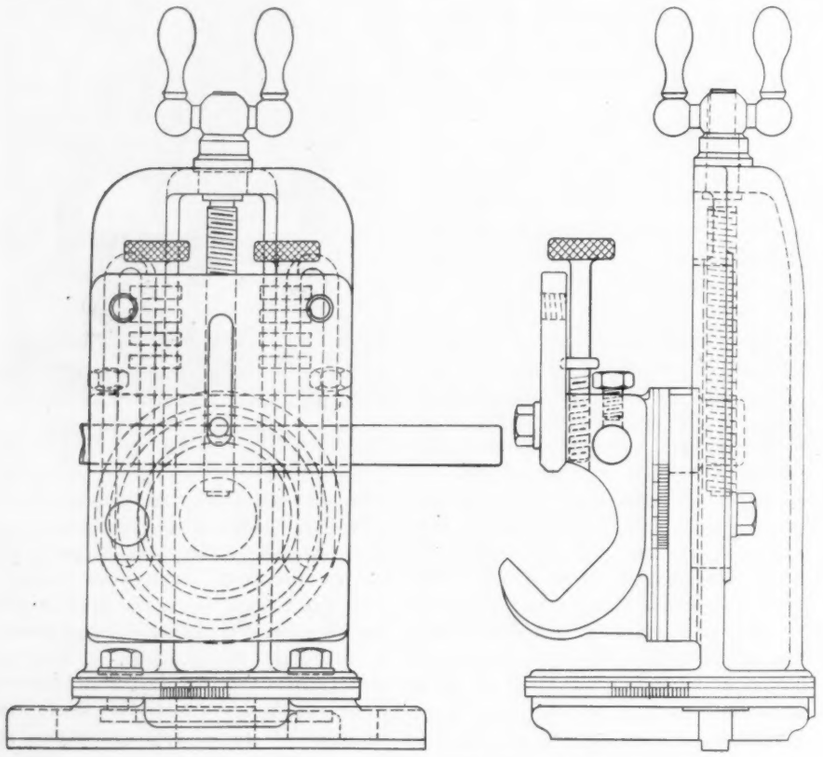


FIG. 7—UNIVERSAL ATTACHMENT, FRONT AND SIDE ELEVATIONS.

A PNEUMATIC VISE.

A new vise possessing a number of decidedly advantageous features is being manufactured by the Western Rail Supply Co., Chicago. It is pneumatically operated, of very simple and rigid construction and adapted by reason of its quick and reliable control to a very general service not only as a vise but as a metal former, punch or forcing press, shear, riveting machine or bull-dozer. The actuating principle of the vise makes its grip absolutely reliable for any air pressure desired up to the strength of the vise itself and there is no possibility of slipping or a false grip as may occur through the lost motion of worn threads or wedging levers on mechanically actuated vises.

The simplicity of the construction of the vise is shown in the accompanying illustrations. Briefly the vise consists of an air cylinder on which is cast solid, one jaw and the base of the vise. This part of the tool is bolted to the bench or stand. The moving part of the device consists of the piston and piston rod. The piston rod is a solid casting carrying the other jaw of the vise and an arm to which is attached a guide rod. This general construction and design is shown clearly in Fig. 1. The only additional parts are the valves and piston packing.

The valve for the admission of air to the cylinder is of the slide type with a unique and specially designed layout of ports and air passageways to provide for the opening and closing of the vise with one measure of air. The valve seat is the horizontal face of a lug, cast on the cylinder and in which are air passages, directly

into the cylinder at the adjacent end and also leading to a pipe connection with the opposite or release pressure end of the cylinder. By this means connections between the ports and both ends of the cylinder is controlled by the valve. The valve is a light casting held in place by suitable guides and reciprocated by means of a cam device connected to the operating lever shown in Fig. 2. The arrangement of the ports and valve is such that with the vise closed and the pressure on the rod side of the piston, the clearance space on the opposite side of the piston is open to the atmosphere through the pipe connection with the valve. The release motion of the valve makes a direct connection between the two ends of the cylinder and closes the exhaust so that the air in equalizing passes from the presssure end to the other side of the piston. The piston area being greatest on that side, the jaws of the vise open sufficiently to remove the piece. Another position of the valve permits a complete release of the air in the cylinder and the movable jaw may be opened as desired.

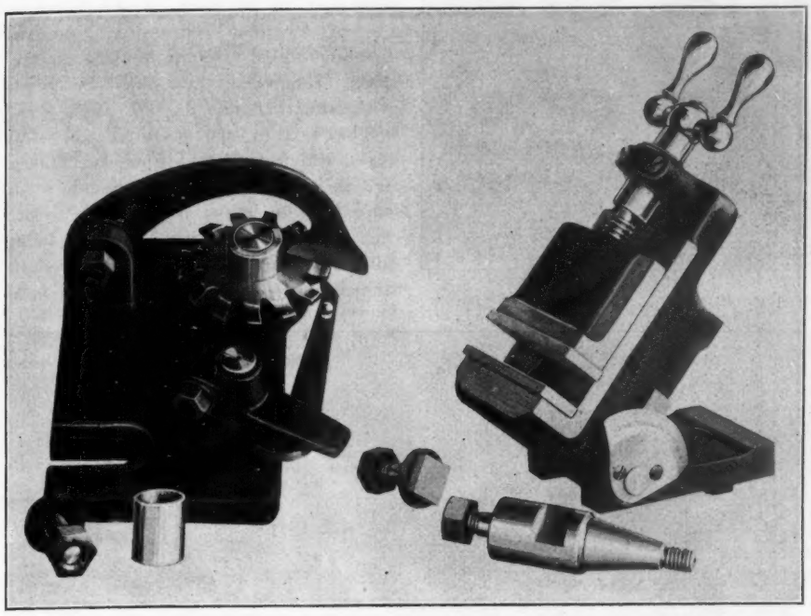


FIG. 8—UNIVERSAL VISE AND GEAR CUTTER GRINDING ATTACHMENT.

The piston is of the simple solid double disc type with a counterbore in one disc into which the end of the piston rod fits. Between the discs is a layer of suitable packing and the piston is secured by means of the stud bolt and nut shown. The vises are made in sizes from 6 to 8-inch jaws and from 10 to 12-inch openings and the piping to a set of vises can also be arranged so that they may be operated under different pressures. Under 100 pounds air pressure the vises are capable of gripping with a pressure varying from 1,865 pounds to 3,436 pounds depending on the size of the vise. For special work other than simple vise work dies are attached to the jaws for punching, riveting or forming as occasion requires.

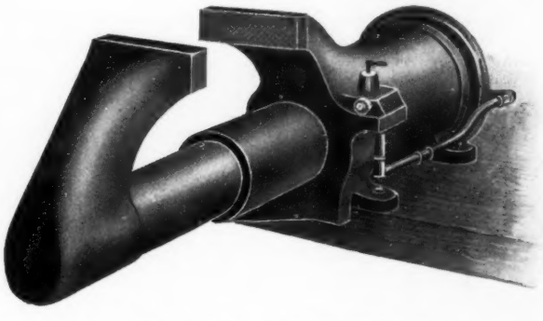


FIG. 1—PNEUMATIC VISE OPEN.

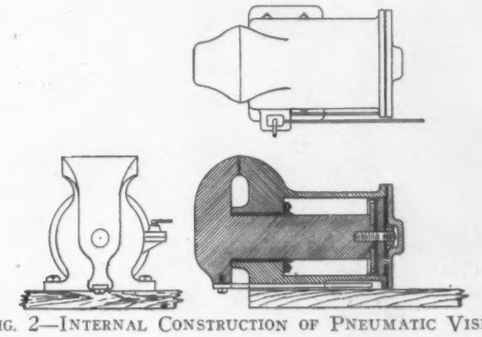


FIG. 2—INTERNAL CONSTRUCTION OF PNEUMATIC VISE.

A HIGH POWER WHEEL LATHE.

The accompanying illustrations show some of the features of a high power wheel lathe recently placed on the market by William Sellers & Co., Inc., Philadelphia. The machine is very massive and of great weight. It is designed to utilize to the fullest extent high speed tool steel. The actual cutting time per wheel in wheel lathes has been reduced to such a point that the time lost in handling and setting the work and changing the tools has become relatively more important. Further improvements must be looked for in the direction of reducing the time and the labor of performing these operations. With these facts in view, the present machine was developed and given the necessary power and stiffness to take the heaviest practicable cuts. In addition, it possesses certain features to facilitate handling of both the work and the tools.

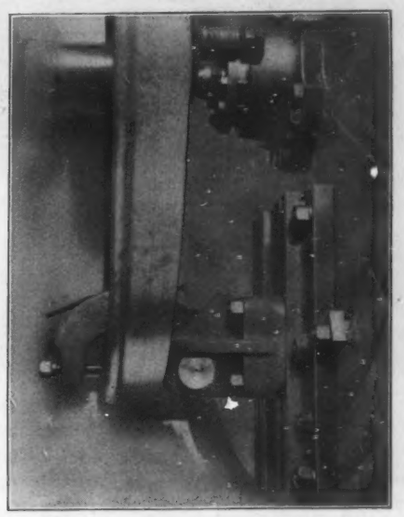


FIG. 1—AUTOMATIC DRIVER.

The bed is broad and of unusual depth, forming a rigid base. Power is transmitted to the two face plates from a hand wheel-driven shaft through two gear reductions. This

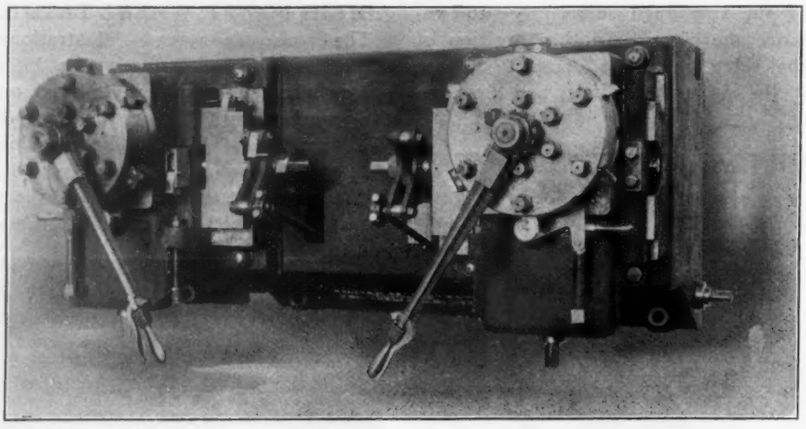


FIG. 2—TOP VIEW OF TOOL BENCH.

eliminates a direct drive from the shaft itself and provides a drive of great power. In connection with the large diameter of the shaft, it produces a drive which is free from all tendency to chatter. Pinions for driving the face plate are located in nearly the same horizontal planes as the tools and on the same side of the center. This results in the tool loads being transmitted directly through the face plate without imposing any pressure on the spindle bearings.

Another feature tending to the reduction in time in cutting is the mounting of the sets of tools required for roughing and finishing the rim in two turret tool holders of special construction. By means of these, each tool can be brought into position in turn by rotating the turret by a hand lever. When the various working positions of the turret are reached a spring latch holds it securely and a further motion of the hand lever clamps the turret firmly in position. The turret is of steel and the center clamping bolt has a transverse opening for the roughing tool. This permits a long bar to be used, which is capable of frequent redressing. As the forming tools are not subject to frequent renewals, they may be made with short shanks.

The turrets are mounted on slide rests, which are heavy and low. These are in turn carried on a bench made adjustable by racks and pinions, to suit the diameters of the wheels being turned. The base of the slide rest is arranged to swivel on the bench to suit the angle of the wheel tread. Each slide is provided with a feed ratchet, connections for which are fitted with ball joints. A micrometer screw and stop on the side of the cross slide enables the wheels to be rough turned to the same diameter without calipering. While finishing the stop can be swung to one side. The illustration, Fig. 2, is a top view of the bench and turret tool holders. The spring latches are plainly shown and also the ratchet levers, by which the tools are successfully brought into action and the turrets locked. Fig. 3 is an elevation of the tool bench with turrets and rests. This illustration also shows the adjusting pinions, swiveling slides, feed ratchets and cross slides, together with the micrometer set screws and turnover stops for regulating the depth

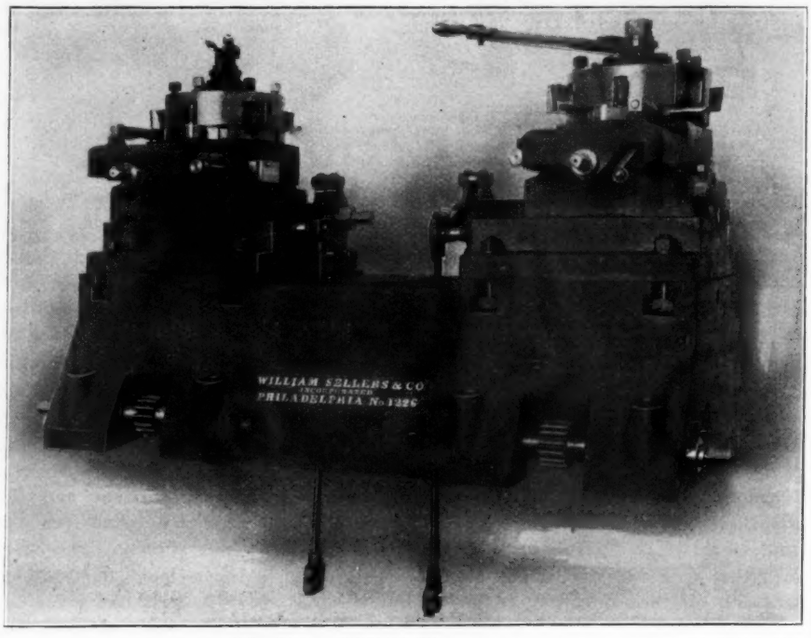


FIG. 3—ELEVATION OF TOOL BENCH.

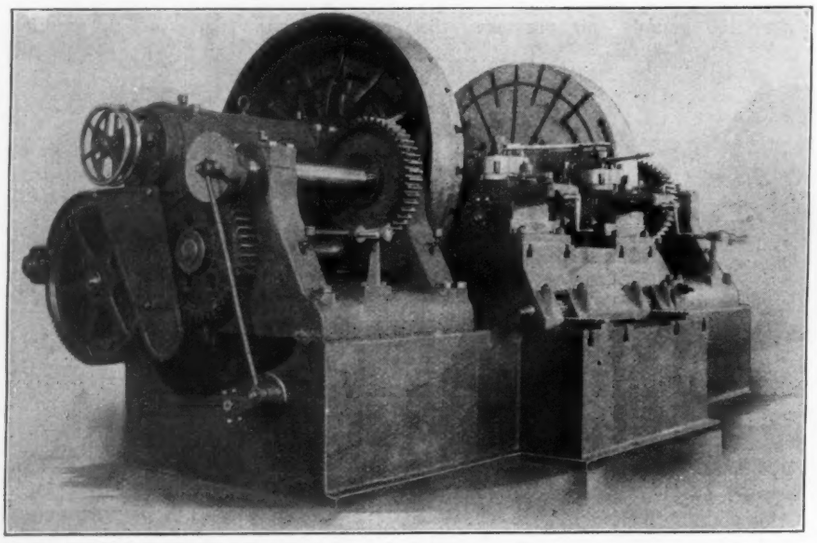


FIG. 4—END OF LATHE, SHOWING ARRANGEMENT OF DRIVING GEARS.

of cut to insure uniformity of the wheel diameters. The massiveness of the tool bench is plainly shown in this illustration.

The front of the openings in the turrets for the forming tools is made with a slight taper, to fit which a corresponding taper is provided on the tool sockets. This accurately centers the tools and holds them securely against side motion. The taper also permits a reduction in the size of the tool body without decreasing the broad bearing surface, which supports the tool near the cutting edge.

One of the most important features of this machine is the form of automatic driver provided. The first object was to make a driver which would securely lock the wheels against the pressure of the heaviest cuts without side strain in the wheel rims and which would hold with a resistance proportional to the cut. It was also desirable that the driver be self-contained and without loose parts to be removed or replaced when changing the wheels. The driver shown in the accompanying illustrations will fill these conditions, grasping the inner and outer faces of the tire without side strain and being each clamped by a single set screw with an ordinary short wrench. They automatically tighten as the cut is increased and no loose bolts or clamps are needed. Each driver is mounted in a swing frame or plate secured to the face plate of the lathe for conveniently adjusting the driver to suit wheel diameters, location of crank pins and number of spokes. In releasing the drivers, the set screw is loosened, while the lathe is slowly running. The driving arm drops open and latches in that position, as shown in Fig. 5. These drivers can be manipulated with great rapidity. The illustration, Fig. 5, shows the drivers in three positions. The one above and to the right is latched into position for inserting and removing the wheel. The driver beneath is in position for clamping and is unlatched. When the face plate is revolved, this driver will automatically open and latch. The driver on the left shows the gripping jaw in the floating block to which the clamping arm is pivoted. Side motion in the clamp is utilized for producing a toggle, resulting in a driving power proportional to the resistance of the cut.

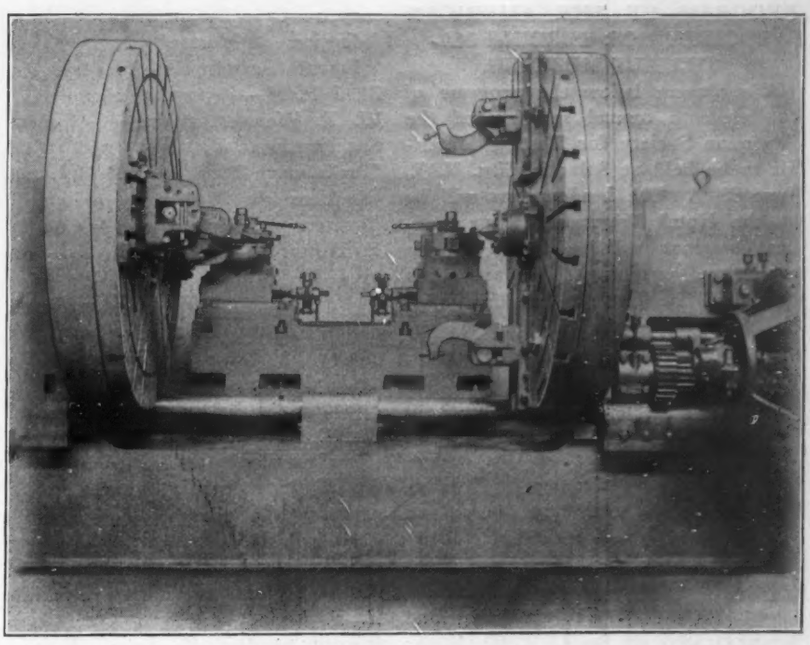


FIG. 5—BACK VIEW OF LATHE, SHOWING ARRANGEMENT OF AUTOMATIC DRIVERS.

The spindle caps on the heads are made of one continuous piece, producing a nearly solid support for the hardened steel step placed at the end of the spindle for taking end thrusts. Secured to the face plates are flanged bearings through which the sliding spindles pass, reducing their overhang when supporting the work. For driving the lathe a motor is provided with a speed range of 2 to 1, which, together with the mechanical changes, gives spindle speeds varying from ⅜ to 1½ turns per minute with numerous intermediate steps.

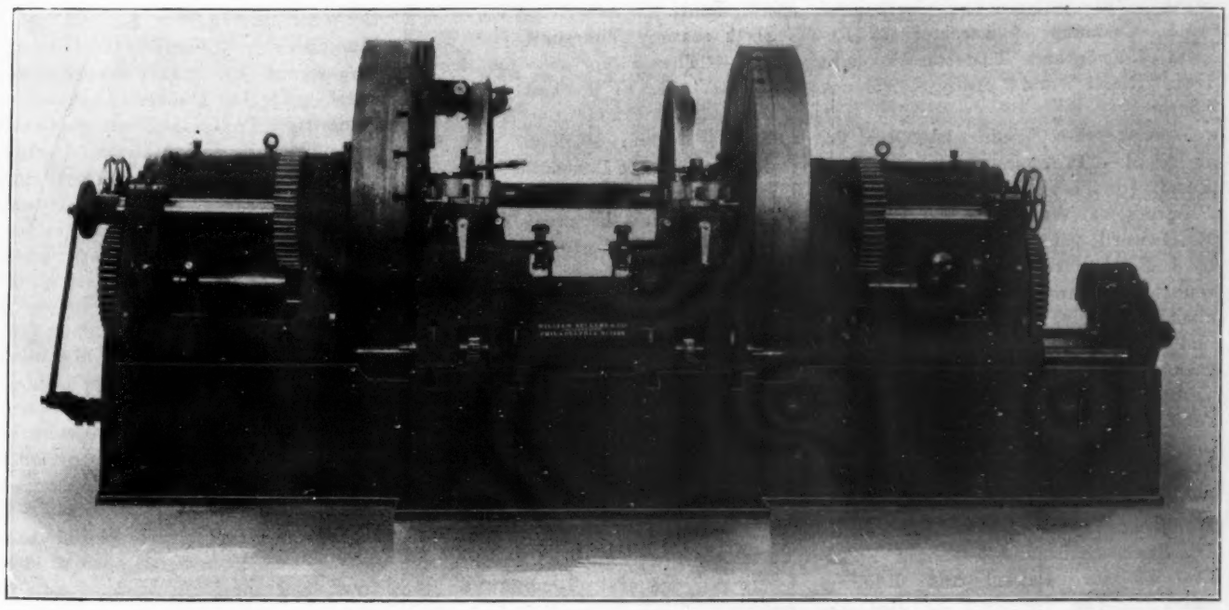


FIG. 6—THE HIGH POWER WHEEL LATHE COMPLETE.

PROGRAM OF THE AMERICAN SOCIETY FOR TESTING MATERIALS MEETING.

We present below the program of the eleventh annual meeting of the American Society for Testing Materials to be held at Atlantic City, N. J., June 23-27. The headquarters will be at the Hotel Traymore. Nine business sessions will be held, two on each day, excepting Saturday, when there will be but one meeting. Social features of the meeting will include a smoker on Wednesday evening and an informal dinner on Friday evening. The program is as follows:

First session, Tuesday, June 23, 3 P. M.—Annual report of the executive committee; "Testing Is Not Inspection," W. A. Aiken; report of committee B, Walter Wood, chairman, Standard Specifications for Cast Iron and Finished Castings; "Method of Obtaining a Truly Circular and Uniform Chill in Rolls," T. D. West; report of committee H, L. W. Page, chairman, Standard Tests for Road Materials; "The Acceptance of Stone for Use on Roads Based on Standard Tests," R. S. Greenman; "Fuel Investigations," Geological Survey; "Progress During the Year Ending June 30, 1908," J. A. Holmes; "The Structural Timbers of the Pacific Coast," R. Thelen; miscellaneous business; election of officers.

Second session, Tuesday, June 23, 8 P. M.—Annual address by the president; "Some Features of the Present Steel Rail Question;" "The Relative Corrosion of Steel and Wrought Iron Water Pipes," H. M. Howe; report of committee U, A. S. Cushman, chairman, "The Corrosion of Iron and Steel;" "Electrolysis and Corrosion," A. S. Cushman; "Characteristic Results of Endurance Tests on Wrought Iron, Steel and Alloys," Henry Souther.

Third session, Wednesday, June 24, 10 A. M.—"Preliminary Progress and Results of Tests of Steel Columns in Progress at Watertown Arsenal," J. E. Howard; discussion to be opened by J. E. Howard and Edgar Marburg; report of committee F, H. M. Howe, chairman, "Heat Treatment of Iron and Steel;" "Some Practical Applications of Metallography," William Campbell; report of committee Q, J. A. Kinkead, chairman, "The Tempering and Testing of Steel Springs and Standard Specifications for Spring Steel;" "Tests of Staybolts," E. L. Hancock; report of committee D, L. W. Page, chairman, "Standard Specifications for Paving and Building Brick;" "The Influence of the Absorptive Capacity of Bricks Upon the Adhesion of Mortar."

Fourth session, Wednesday, June 24, 3 P. M.—Report of committee A, W. R. Webster, chairman, "Standard Specifications for Iron and Steel;" "Preliminary Program and Results of Work on the Metallurgy of Steel in Progress at Watertown Arsenal," J. E. Howard; discussion to be opened by J. E. Howard, W. R. Webster and J. P. Snow; "A Microscopic Investigation of Broken Steel Rails: Manganese Sulphide as a Source of Danger," Henry Fay; "Some Results Showing the Behavior of Rails Under the Drop Test, and Proposed New Form of Standard Drop Testing Machine," S. S. Martin; "Types of Failures in the Base of Cold-Rolled Rails," P. H. Dudley; "Rail Failures —Split Heads," M. H. Wickhorst; "Some Notes on the Rail Situation," E. F. Kenney.

Fifth session, Thursday, June 25, 10 A. M.—Report of committee C, G. F. Swain, chairman, "Standard Specifications for Cement;" "Portland Cement Standards, Especially for Tensile Strength," W. W. Maclay; report of committee I, F. E. Turneaure, chairman, "Reinforced Concrete;" "Sands—Their Relation to Mortar and Concrete," H. S. Spackman and R. W. Lesley; "Permeability Tests of Concrete with the Addition of Hydrated Lime," S. E. Thompson; "Some Tests of Reinforced Concrete Beams Under Oft-Repeated Loading," H. C. Berry; "An Important Consideration Concerning Cement Analysis," S. F. Peckham; "Formulas for Reinforced Concrete Beams in the Light of Experimental Data," W. F. Scott.

Sixth session, Thursday, June 25, 8 P. M.—"The Fireproof Qualities of Concrete," R. F. Tucker; "Shearing Values of Stone and Concrete," H. H. Quimby; "Some Methods and Records Used in the Laboratory for Testing Cement and Other Materials for the Subway and Elevated Railway in Philadelphia," S. A. Brown; "The Influence of Fine Grinding on the Physical Properties of Portland Cement," R. K. Meade; "Tests of Bond in Reinforced Concrete Beams," M. O. Withy; "Cement and Concrete Work of United States Reclamation Service, with Notes on Disintegration of Concrete by Action of Alkali Water," J. Y. Jewett.

Seventh session, Friday, June 26, 10 A. M.—Report of committee C, S. S. Voorhees, chairman, "Preservative Coatings;" general discussion on the question, "Will 'Pure-Paint' Legislation Give Us Better Paints?" This discussion will be opened by C. D. Rinald, C. B. Dudley, E. F. Ladd, C. B. Heckel, J. Dewar, J. Peters and A. Somers; "Certain Solubility Tests on Protective Coatings," G. W. Thompson; "Analysis of Varnishes," P. C. McIlhiney; report of committee N, A. H. Gill, chairman, "Standard Tests for Lubricants."

Eighth session, Friday, June 26, 3 P. M.—"The Use of the Extensometer in Commercial Work," T. D. Lynch; "Special Features of a Recently Installed 600,000-pound Universal Testing Machine," T. Y. Olsen; "New Forms of Pendulum Testing Machines," T. Y. Olsen; "An Autographic Recorder for Commercial Tension Tests," H. F. Moore; report of committee G, J. W. Esterline, chairman, "The Magnetic Testing of Iron and Steel;" "Uniformity in Magnetic Testing and in the Specifications of Magnetic Properties," C. W. Burrows; report of committee R, E. D. Meier, chairman, "Uniform Specifications for Boilers."

Ninth session, Saturday, June 27, 10 A. M.—"Forest Service Tests to Determine the Influence of Different Methods and Rates of Loading on the Strength and Stiffness of Timbers": (a) "The Purpose and Scope of the Investigations," McGarvey Cline; (b) "Analytical Discussion of Speed-Strength Relation," H. D. Tieman; "Manganese Bronze," C. E. Spare; "Notes on the Desirability of Standard Specifications for Hard-Drawn Copper Wire," J. A. Capp and W. H. Bassett; "The Structural Materials Testing Laboratories, United States Geological Survey: Progress During the Year Ending June 30, 1908," R. L. Humphrey; "Effect of Combined Stresses on the Elastic Properties of Steel," E. L. Hancock; report of committee P, I. H. Woolson, chairman, "Fireproofing Materials;" report of committee S, W. A. Aiken, chairman, "Waterproofing Materials;" miscellaneous business.

Sweden Buys Machinery.—Sweden's imports are increasing in many lines. The country's purchases of machinery and tools (not engines or sewing machines) for the first eight months of 1907 amounted to $5,450,700, against $1,342,100 during the same period in 1906. The importation of steamships increased from $1,414,900 to $1,819,200 in the same comparative period; those of oil cases from 77,035 tons to 96,890 tons; and those of wheat flour from 4,706 tons to 7,757 tons.

May Closed With Good Gains

For a short week financially, Saturday being Memorial day when financial operations are suspended, last week was as thoroughly mixed as to its developments as have been others this year. In general they appeared to be favorable. While the market opened Monday less active and somewhat irregular, closing with a rally, yet further weakness appeared Tuesday and prices declined rapidly. Feverish signs were apparent Wednesday, prices declining to the lowest level for the week, but later recovering the largest part of the loss. Extreme weakness in the Gould railroad stocks Thursday reacted unfavorably on the market. But when receivers were named Friday for the Wabash-Pittsburg Terminal, a Gould subsidiary railroad proposition, the market recovered somewhat and prices became firmer, although because of the approach of a holiday, transactions were limited in size. The "corners" in May corn, wheat and oats, corn reaching the highest price in six years, attracted the most of the attention of the speculating public.

The month of May closed with generally substantial gains in the general market. Prices were at a higher level, even following the rapid declines close upon the heels of the "boom" of the earlier part of the month. Although over $25,000,000 in gold had been sent abroad and $45,000,000 had been returned to the government in called deposits, yet money continued easy. Call loans ruled for the most part at 1½ to 1¾ per cent. The Bank of England for the sixth time this year reduced its rate Thursday, bringing it down from 3 per cent to 2½ per cent, this being the lowest in three years.

From all over the west continue to come favorable crop reports. In fact, investors have turned aside from the usual stock market gossip to scan eagerly crop prognostications from every section. While the consensus of expert opinion seems to be that there will not be a "bumper" crop, it will be at least equal to and probably will excel that of last year. Business failures for the week ending May 28 numbered 263, compared with 284 last week, and 142 in the corresponding week of 1907.

Receipts of cash from the interior did not offset the gold exported during the week together with the national treasury payments, thus reflecting a decrease of $8,575,375 in the surplus holdings of the clearing house banks which item is now down to $47,910,000, or 28.58 per cent, a loss of 0.66 per cent. The total net gain in cash from the interior since the beginning of the year is $125,086,000, comparing for like periods with gains of $17,107,000 in 1907, and $52,217,000 in 1905. Loans decreased in clearing house banks $1,411,000; specie decreased $14,618,200; deposits also decreased $12,830,900. Non-member banks and trust companies reported loans increased $5,375,000; deposits increased $12,741,000. The percentage of reserve reached 33.4 per cent, an increase of 0.6 per cent. The number of shares dealt in for the five business days totaled 3,574,650. compared with 6,678,312 the previous week, and 3,012,900 for the corresponding week last year. Bonds, exclusive of railroad bonds, aggregated $12,948,000, compared with $23,528,000 the previous week, and $5,516,000 the corresponding week last year.

Copper Stocks.

New York.—Amalgamated Copper closed 64¾, a net gain of ⅞.

Boston.—Butte Coalition closed 23¾, a net gain of 1½; Calumet & Hecla closed 672, a net loss of 2; Calumet & Arizona closed 108½, a net loss of 1; North Butte Mining closed 74¾, a net gain of 1⅜; Quincy Mining closed 83, a net loss of 1.

Financial Notes.

The General Electric Co. has declared the regular quarterly dividend of $2 a share, payable July 15; American Can Co. the regular quarterly dividend of 1¼ per cent on preferred, payable July 1.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. May 29	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	9	— ¾	Sept. 3	19,820 000			
Allis-Chalmers pr	24¾	+ ⅜		16 150.000	7 cum	1¾ Q.	Feb., 1904
American Can	5	— ⅛	Feb. 3	41 233 300			
Am. Can pr	54½	— ⅝		41.233,300	7 cum	1¾ Q.	April, 1908
Am. Car & Foundry	55⅜	— ½	June 25	30.000,000		1 Q.	April, 1908
Am. Car & Fdy. pr	97			30 000.000	7 n. c.	1¾ Q.	April, 1908
American Loc	48⅜	— ⅜	Oct. 20	25,000.000	5	1¼ Q.	May, 1908
American Loc. pr	103			25.000.000	7 cum	1¾ Q.	April, 1908
American Ship	45		Oct. 14	7 60 .000	4	1 Q.	June, 1908
American Ship pr	100			7.900,000	7 n. c.	1¾ Q.	April, 1908
Am. Steel Foundries	63⅜	+ ⅜	Oct. 6	15 810 000			
Am. Steel Foundries pr	34	— ⅛		17,240.000	6 cum	2½	Aug., 1904
Barney & Smith	50		June 2	2 000.000	4	1 Q.	Sept., 1907
Barney & Smith pr	100			2 500 000	8 cum	2 Q.	June, 1908
Bethlehem Steel	15		April 7	14,862.000			
Bethlehem Steel pr	40	—1¼		14 908 000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	30¾	+ ⅜	March 17	45.000 000*	6	1½ S. A.	Feb., 1908
Cambria Iron	45			8,468.000*	4	2 S. A.	April, 1908
Chicago Pneumatic Tool	26	—2	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	36½		Oct. 19	34 235 500		3½	April, 1902
Crucible Steel	57⅞	— ⅛	Oct. 21	24.578 400			
Crucible Steel pr	40½	—1⅝		24,436.500	7 cum	1 Q.	Dec., 1907
Empire Steel	8		Feb. 26	1,254.770			
Empire Steel pr	40			2 500.000	6 cum	3 S. A.	Jan., 1907
Fay & Egan	100		Feb. 18	1,000,000	6	1¾ Q.	May, 1908
Fay & Egan pr	110			1,000 000	7 cum	1¾ Q.	May, 1908
General Electric	131	—2½	May 12	65,167.400	8	2 Q.	April, 1908
Harbison-Walker	11		Jan. 20	18,000 000		½	Oct., 1907
Harbison-Walker pr	67½	+ ½		9.6 0,000	6 cum	1½ Q.	April 1908
International Pump	22½		June 2	17.787 300		1	April, 1905
International Pump pr	72½			13,835,000	6 cum	1½ Q.	May, 1908
Lackawanna Steel	84	—1	March 11	34,971 400			
Lake Sup. Corp	5½		Oct. 7	40,000 000			
New York Air Brake	66	—3	June 18	8 012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	120		Feb. 5	8.500 000	6	1½ Q.	June, 1908
Niles-Bement-Pond pr	100			2.000,000	6 cum	1¼ Q.	May. 1908
Otis Elevator Co	36		March 16	6 156,600		1½ S. A.	April, 1908
Otis Elevator Co. pr	88	+1		5 449.500	6 n. c.	1½ Q.	April, 1908
Penn. Steel	60		May 11	10.770 000			
Penn. Steel pr	97	+ ½		16.5 0 400	7 n. c.	3½ S. A.	May, 1908
Pittsburg Coal Co	12	— ⅛	Feb. 10	28.853 400			Nov., 1906
Pittsburg Coal Co. pr	45½			27,030.800	7 c.	1¾	April, 1905
Pressed Steel Car	27		Feb. 19	12,500,000		3	Aug., 1904
Pressed Steel Car pr	84¾			12.500.000	7 n. c.	1¾ Q.	May, 1908
Pullman	158⅞	— ½	Nov. 11	100 000 000	8	2 Q.	May, 1908
Railway Stl. Spring	37		March 5	13,500.000	4	2 S. A.	April, 1908
Railway Stl Spring pr	91			13,500 000	7 cum	1¾ Q.	June, 1908
Rep. Iron & Steel	17¼	— ⅜	Oct. 21	27,191 000			
Rep Iron & Steel pr	68	+1		20,416 900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	51½	+2¼	March 11	10.000,000	5	1¼ Q.	Mar., 1908
Sloss-Sheffield pr	95	+3		6.700 000	7 n. c.	1¾ Q.	July, 1908
U. S Pipe & Fdy	27¼	— ⅛	June 24	12.500,000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	75			12 500,000	7 n. c	1¾ Q.	June, 1908
U. S Steel	37¼	— ⅛	April 20	508,302,500	2 n. c.	½ Q.	June, 1908
U. S. Steel pr	101½	+1¼		360,281,100	7 cum	1¾ Q.	June, 1908
U. S. Steel 5's	98			463.798.000	b	5 A.	
Va. Iron Coal & Coke	50		Nov. 17	9 073 680			
WestinghouseElec	50		June 24	23 933.200*	10	2½ Q.	Oct., 1907
WestinghouseAir Brake	98	—2	Oct. 6	11.000,000*		2¼ Q.	April, 1908

Par value of shares $100, except those starred (*), $50

NEWS FROM MANY INDUSTRIES

New Buyers:—

The American Railway Appliance Co., capital stock $1,000,000, has been incorporated at Wilmington, Del., by F. M. Shove, S. E. Roberson and Harry W. Davis, of that city.

Ralph C. Lupton, George C. Maris and George B. Lewis, Wilmington, Del., have been granted a charter for the American Metals Separator Co., capitalized at $1,000,000.

The Star Mitre Machine Co., Rockford, Ill., has filed articles of incorporation, with a capital of $6,000. Those interested are: Fritz Peterson, Albert Ganderson and G. W. Swan.

The Cape Girardeau Smelting & Mfg. Co., Cape Girardeau, Mo., has been incorporated by H. M. Leonard, M. D. Wilhite, A. R. Ponder and others, with a capital stock of $150,000.

The U. S. Mill Machinery Co., Portland, Me., machinery, has been incorporated with a capital of $5,125,000. J. C. Small is president, and Richard Webb, treasurer and clerk, both of Portland.

S. B. Patch & Sons Co., Streator, Ill., with a capital of $8,000, has been granted a charter to manufacture and deal in iron, steel, brass and copper. The incorporators are: R. B. Patch, A. L. Patch, and S. J. Patch.

P. Bowman Bird, Nat P. Lane and V. O. Lawrence, of Ridgewood, N. J., have incorporated the Lawrence Mfg. Co., Ridgewood, with a capital of $25,000, and will engage in the manufacture of railway and tramway equipment, etc.

The American Coupler & Socket Co., 539 Woolner building, Peoria, Ill., has been incorporated to manufacture couplings, sockets and devices, with a capital of $2,500. Those interested include J. W. Maple, H. E. Todd and J. M. Anderson.

The Central Foundry & Machine Co., Columbus, O., has been incorporated with a capital of $20,000, by John S. Ball, Dwight R. Mason, Charles E. Whiton, Ella M. Mason, Lena B. Whiton and Elizabeth P. Fenton.

James J. Harold Mfg. Co., Brooklyn, N. Y., to manufacture engines, dynamos, generators, pumps, etc., with a capital of $10,000, has recently been incorporated by James J. Harold, Emma Harold and Charles W. Harold, 202 Guernsey street, Brooklyn.

The George E. Hobbs Iron Co., Baltimore, Md., for conducting a metal, scrap iron and machinery business, was recently incorporated by George E. Hobbs, George A. McCauley, Jacob Noll, Allan B. Souther and C. Foster Talbott. The authorized capital is $10,000.

The Canners' Machinery Co., Buffalo, N. Y., has been chartered by the following persons, to manufacture machinery and tools, especially those adapted to canning: Roger C. Adams, William B. Phinney and George B. Keating, of Buffalo, and others. Capital, $75,000.

A charter has been granted to O. H. Hummel & Sons, New York City, to manufacture machinery, engines, electrical appliances, etc., with a capital of $10,000. The incorporators are: H. Leroy Bell, Robert D. Geswein and George W. Collins, 59 Wall street, New York City.

The Miller-Warren Co., New York City, has been chartered with a capital of $5,000, to manufacture boilers, engines, machines, tools, hardware, etc. The incorporators are: William J. Schatz, Daniel Miller and Edward Warren, 154 Nassau street, New York City.

Articles of incorporation have been filed by the Alexander Crossing Co., Clinton, Ill. The company has been organized to manufacture and sell railway supplies, with a capital stock of $600,000, and has these incorporators: Lewis Alexander, I. H. Brown and Morris K. Hinchliff.

The Standard Polishing Wheel Co., Springfield, Mass., polishing wheels, has been incorporated with a capital of $15,000. The officers of the corporation are: President, Joseph Satler, Hartford, Conn.; treasurer, Philip Slobodien, Holyoke, Mass.; clerk, Maurice H. L. Slutzin, Springfield, Mass.

With an authorized capital of $10,000, the Leiser-Johnson Co., Brooklyn, N. Y., has been incorporated to manufacture metal goods, etc. Those interested in the new enterprise include: Leopold W. V. Leiser, 53 West Eighth street, New York City; Robert Johnson, 1483 Dean street, and Emanuel Newman, 168 Hancock street, Brooklyn, N. Y.

A charter has been granted to the Fowlis Mining Co., Buffalo, N. Y., to engage in mining and preparing ores and metals for the market. The new company has been capitalized at $100,000, and was incorporated by David Fowlis, Niagara Falls, N. Y.; George A. Keller, William H. Baker and M. F. Dirnberger Jr., all of Buffalo.

The Newark General Mfg. Co., Newark, N. J., has filed articles of incorporation to manufacture machinery, tools, implements, etc., with a capital of $100,000. Those interested in the new enterprise are: Jacob M. Petty, 308 Dodd street, East Orange, N. J.; James McEwan, 200½ Garside street, and David E. Brown, 295 Clifton avenue, both of Newark.

The Columbia Box Strap Co., of New York City, has been chartered to engage in the manufacture of metal straps and metal goods, with an authorized capital of $5,000. The incorporators are Bernard J. Malone, 407½ Eighteenth street; Henry Meislahn, 76 Clifton place, both of Brooklyn, N. Y., and Fred Knowlton, 638 East 139th street, New York City.

New Construction:—

The Commercial Club has purchased a foundry site for a proposed iron foundry at Auburn, Ind.

Additions to the plant of the Smith & Watson Iron Works, Portland, Ore., have been commenced.

The Brewer Foundry Co., Tecumseh, Mich., has awarded the contract for the erection of several additional buildings to its plant.

The Parrett Machine Co., Wenona, Ill., James and Dent Parrett, proprietors, are building a machine shop 20 x 36 feet, for repair work and manufacturing.

Charles Huggins and other residents of Shelbyville, Tenn., are erecting a machine shop to be used for manufacturing and repair work at Shelbyville.

The Scully Steel & Iron Co., Chicago, has leased a parcel of land fronting 640 feet on Ashland avenue and 240 feet deep, for the construction of a warehouse to cost $300,000.

The Dayton Globe Iron Works, Dayton, O., has found it necessary to double the capacity of the plant by installing two more hydro-electric units, because of the increased number of orders.

John E. Healy, Wilmington, Del., has been awarded the contract for the brick and mill work for the foundry of the Tropenas Steel Co., New Castle, Del. He will also erect offices for the company.

The Marion Steam Shovel Co., Marion, O., has drawn plans for the erection of an addition to the plant

80 x 300 feet, which will be fitted with modern steel making machinery.

The Roger Iron & Boiler Co., Muskegon, Mich., will hereafter operate the plant with Muskegon river power from the Grand Rapids-Muskegon Power Co., and a 45-horsepower dynamo is being installed.

The Tandem Gas Engine Co., Houston, Tex., is installing three car loads of machinery for plant equipment. General Manager J. B. Hicks announces that the plant will be in operation by July 15.

The George Miles Mfg. Co., Winsted, Conn., manufacturer of pneumatic hoists and tubes, has rented a portion of the old foundry building on Main street. Extensive improvements are to be made about the property.

The Rockford Machine & Shuttle Co., Rockford, Ill., drill presses, sewing machine attachments, etc., advises that the recently noted increase of capital is to provide for additions and various improvements to its plant.

Carlos G. Plant has applied to the state government for a concession to establish an iron foundry and machine shop at Sabinos, Coahuila, Mex. The concession provides for the initial investment of $25,000. The plant is to be placed in operation within six months.

The contract for the erection of the foundry building for Charles F. Schaefer, at Thirty-fifth and Gray's Ferry road, Philadelphia, has been awarded the William Steele Sons' Co. The building will cost about $5,000, and will be one-story high, 50 x 100 feet.

The Humboldt Portland Cement Co., through its construction committee has let the contract at Leavenworth, Kans., for the construction of a machine shop 40 x 120 feet, of steel and concrete construction. The Santa Fe railroad has agreed to put the balance of the switch into the plant.

As a result of increased business, the Sterling Foundry, Sterling, Ill., has reached its capacity in the production of the Cochran cast iron culvert. In consequence, Mr. Cochran is planning to build an extra department for the manufacture of the culvert alone, installing special machinery.

The Indiana Forging Co., Indianapolis, formerly known as the Anderson Forging Co., has completed its new brick factory at Roosevelt avenue and Dearborn street. The company is moving from Anderson. J. H. Diehl is president and treasurer and K. E. Jones is secretary of the company.

The Comee Metallic Packing Co. has let the contract for the erection of a new foundry at Stevens Point, Wis. It will be one story in height, 32 x 70. The machinery has been purchased and it will be driven by gasoline engines. The company has established the eastern agency of the company with the Nathan Mfg. Co., Singer building, New York City.

A contract has been signed by L. Howard, president of the Howard Mfg. Co., Savannah, Mo.; Secretary T. G. Travis and Director W. E. Wells, whereby the company agrees to locate its plant at Ralston, Neb., near Omaha. The company expects to start making stoves at Ralston by Sept. 1, and in the meantime a two-story factory building, warehouse and foundry will be built at Ralston, to cost about $50,000.

The Great Northern Stove Mfg. Co. has secured five acres of land in Minneapolis for the location of its new plant. It will have trackage with the Northern Pacific and Great Northern railways. The main building will be brick, four stories, of mill construction, 60 x 250 feet; the foundry will be 80 x 250 feet, and the warehouse two stories, 30 x 200 feet. Among the Minneapolis men interested in the new company are W. W. Bardwell and C. J. Harrington. The Prince Construction Co. will begin work on the building shortly.

The Hampden Machine Screw Co., Springfield, Mass., is just completing the erection of a plant for the manufacture of all kinds of special machine screws. The equipment will be complete in every detail and by June 15 the company expects to be able to handle orders of any size for anything in the way of special screw goods.

The Goeller Iron Works, Newark, N. J., structural steel and ornamental iron work, is erecting a plant to take the place of the one recently destroyed by fire. It will be one story, 22 feet high, 50 x 200 feet, with an extension 40 x 60 feet, of steel construction throughout, covered with corrugated sheet iron siding and roof. A skylight of iron and wired glass, 12 x 200 feet, will run the entire length of the building. The building is to be used exclusively for structural work, and will have overhead supports sufficient to carry a 20-ton piece of structural material. By a system of doors at each end, the entire width of the building, 12 feet high, can be opened if necessary.

The Buckeye Engine Co., Salem, O., is making extensive improvements to its plant, necessitated by increased business since its entry into the gas engine building field. The testing department is being materially enlarged. A large two-stage air compressor is being installed for driving drills and other small machinery. The compressor will be driven by an engine of four cylinders of 200 horsepower each. In the first stage of the compression process the air is compressed into the receiver at 40 to 50 pounds, and then passes into the second receiver in which it is further compressed to about 100 pounds per square inch, when it is ready for pipe transmission to various departments.

General Industrial.—

The plant of the Fischer Wrench Co., Egg Harbor City, N. J., which has been idle for over two years, has resumed operations.

H. G. Bye, receiver of the Keystone Steel Co., Sebring, O., has disposed of the land and machinery of the company to Frank J. Eberle, for $13,055.20.

The Crescent rolling mills, Bristol, Tenn., of the Virginia Iron, Coal & Coke Co., manufacturer of merchant bar iron, resumed operations May 11. The mill will, until business improves, run single shift only.

The plant and machinery of the Doscher Plane & Tool Co., Saugatuck, Conn., has been purchased by a combination of tool manufacturing companies, including the Ohio Tool Co., the Sandusky Tool Co., and the Chapin-Stevens Co., Hartford, Conn.

The Cambridge, O., bar mill of the Interstate Iron & Steel Co. is being considerably enlarged during a brief shut-down. The furnaces are being overhauled and preparations made to run the plant on double turn when resumption begins this week.

Deeds of transfer of several tracts of land near the Casparis Stone Co.'s quarry, Fairmount, Ill., to the Illinois Steel Co., have just been filed. The land is underlaid with limestone, which is shipped to the Chicago blast furnaces of the steel company.

The mills of the Canada Tin Plate & Sheet Steel Co., Morrisburg, Ont., resumed operation May 18, after being closed since Jan. 27, because of a serious fire. The company resumes business with enough orders on its books to engage its capacity up to the end of the year.

Receivers for the Pope Mfg. Co. have been authorized by the New Jersey court to pay a dividend of 25 per cent to creditors of the corporation. The payment to be made will aggregate $387,000, but the cash will not be distributed until an offer of $50,000 for stock of the American Wood Rim Co. shall have been made.

A gathering of makers of sheet metal was recently held at Boston,

at which were present representatives of companies from Buffalo, Baltimore, Atlanta, Ga., Bellaire, O., St. Louis, Milwaukee, Toledo, New York and Boston. George R. Benjamin, of New York, presided over the deliberations.

The George R. Trumbull Electric Mfg. Co., Trenton, N. J., advises that the output of the company, recently incorporated, will consist of all grades of electrical supplies, both standard and special design. The company has leased property, and has contracted for a complete equipment of presses, dies, etc.

The Helmbacher Forge & Rolling Mill Co., manufacturer of car axles, bar iron, forgings, etc., advises that the St. Louis plant which has been idle from four to five months, resumed operations in full in the finishing department, May 18, and is expected to run for some time. The Madison, Ill., plant is still idle.

The Screw Machine Products Co., Providence, R. I., recently incorporated, advises that it will build in the near future, and will increase its production to some extent. The company produces screw machines, head machines and roll thread machines, and is equipped to handle everything in the screw and turned line up to 1⅛ inches in diameter.

The American Iron & Wire Works, Chicago, announces that the recent incorporation of the company has been brought about in order to take care of the increased business. The company is a manufacturer of ornamental and miscellaneous iron, wire, brass and bronze work, and the business has grown for the past five years so that it has been forced to enlarge its plant.

The declaration is made that William G. Park, of the executive board of the Crucible Steel Co. of America, will return to the company his half of a fee of $40,000 received for services as receiver of the Clairton Steel Co., formerly a part of the Crucible Steel Co. Mr. Park, and the Union Trust Co., Pittsburg, were each given $20,000 by the court.

The John T. Young Boiler Co., Norwich, Conn., advises that it was recently incorporated for the manufacture of steam and hot water heating boilers and kindred goods, and will also do a jobbing trade. The company will be glad to receive catalogs from manufacturers of such goods seeking an eastern market. Its equipment is practically secured for immediate needs.

The Hardware Mfg. Co., Milwaukee, hardware specialties, is incorporated principally to manufacture a newly patented shade adjuster. Arrangements for manufacture have been made. James R. Petley, who is treasurer and purchasing agent of the National Brake & Electric Co., has been chosen president and general manager of the Hardware Mfg. Co., but will continue his connection with the National company.

The plant of the Manitowoc Steel Boiler Works, Manitowoc, Wis., has been sold to Elias Gunnell, C. West and L. E. Gear, all officers of the Manitowoc Dry Dock Co. and the Gunnell Machine Co. They will run the boiler works in connection with the two other plants. William Hess, founder of the boiler works, agrees to remain with the concern for a term of years at a salary, but practically disposes of all his stock in the company.

The Nashua Co-operative Foundry Association, Nashua, N. H., elected the following officers at its recent annual meeting: President and treasurer, T. W. Keely; financial committee, John W. Flaherty and M. Molloy; clerk, Patrick Connell. The officers with the following compose the board of directors: A. J. Keely, John J. Flaherty, John J. Carey, Bernard McWeeney, James H. Moakler and James S. Dolan.

The Porcelain Enameling Association of America has been incorporated to take over the plant and business of the Vollrath Co., Sheboygan, Wis. The officers of the company are: President, A. J. Vollrath; vice president, A. M. Vollrath; secretary, Carl J. Vollrath, and treasurer, Walter J. Vollrath. The company possesses one of the best known enameling foundries in the country. Two large structures are being added to the company's plant equipment.

An application was made May 26 for a receiver for the Ohio Stove Co., Portsmouth, O., which for 30 years has been engaged in the manufacture of stoves and ranges. The petition was filed by Linn Bentley, of Columbus, a stockholder. The assets of the company are placed at $90,000, and the liabilities at only $24,000. Inability to obtain ready money to continue operating the plant because of the money stringency, brought about the action. It was stated that reorganization of the company will be effected.

The Freericks Hot Water Heating Co., Cincinnati, has been incorporated to manufacture hot water heating apparatus, principally the invention and patent of Dr. Arthur Freericks. The system contemplates the use of natural or artificial gas as fuel, and is claimed to be absolutely automatic from an operative standpoint, the gas being lighted at the beginning of the heating season and requiring no further attention during the entire season. The company plans the erection of a building four stories high, 100 x 200 feet.

Trade Notes:—

The Allis-Chalmers Co. has opened an office at Birmingham, Ala., in charge of Seldon Jones, district manager, room 319-320 First National Bank building.

The Interstate Iron & Steel Co. has removed from its former offices on the 16th floor of the First National Bank building, Chicago, to 1101 the same building. The new quarters are better arranged for its needs.

Announcement is made by A. M. Castle & Co., iron and steel, Chicago, that the business will not be affected by the death of A. M. Castle, and will be carried on as heretofore. The board of directors has elected as president William B. Simpson, who has been connected with the company for years as treasurer and manager of sales, and for the past three years, on account of Mr. Castle's ill health, has been practically in charge of the business.

Fires:—

The Carter Galvanized Iron Works, Omaha, Neb., was slightly damaged by fire May 22.

The Topeka Foundry, Topeka, Kans., caught fire from a cupola, May 20, and was slightly damaged.

The pipe shop of the Dominion Iron & Steel Co., Sydney, N. S., was badly damaged May 19, the loss amounting to $10,000.

The plant of the Blatum Mfg. Co., Lindonville, N. Y., gas engine and farm implements, was damaged May 18 to the extent of about $5,000.

The Provo Foundry & Machine Works, Provo, Utah, was saved from a serious fire by the prompt action of the fire department, May 17. The damage amounted to about $400.

The Electrical Exchange building, 132-138 Liberty street, New York, was visited by a disastrous fire May 24, the total damage to the tenants being about $50,000, chiefly from water. The fire originated on the top floor and spread downward through the elevator shaft. Slight damage was done to the Frasse Co., tools; the Dodge Mfg. Co.; W. M. Sheehan & Co., electrical supplies; Schuchart & Schutte and others.